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ABSTRACT

The Bi-Regional Educational Improvement Forum in Atlanta, Georgia (November 1979) considered three areas of school improvement, including State Department of Education (SEA) delivery systems and the use of technology to improve schooling. The three forum articles concerned with delivery systems treat the transformation of policies emanating from Washington, D.C., the implementation of these policies at the local level, the range of SEA dissemination efforts, and the attempts in South Carolina to foster change in the educational delivery system. The three articles on technology discuss demographic and social changes that affect education, implications for the use of communications and technology in coping with the shrinkage in educational resources, and the use of energy-related technologies to improve the quality of community life. (WD)

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BI-REGIONAL EDUCATIONAL IMPROVEMENT FORUM

November 19 & 20, 1979

Atlanta, Georgia

Sponsored by

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TABLE OF CONTENTS

Page

INTRODUCTION 1

SECTION I: SEA Delivery Systems for School Improvement

A STUDY OF DISSEMINATION EFFORTS SUPPORTING SCHOOL IMPROVEMENT: FOCUS ON STATES
David P. Crandall 3

STATE DISSEMINATION GRANTS PROGRAM: A LOOK AT SEA DELIVERY SYSTEMS
Doren L. Madey. 11

BUILDING AN SEA DELIVERY SYSTEM: ONE STATE'S VIEW
Charlie Williams. 21

SECTION II: Technology and School Improvement

EDUCATION IN THE 80's
Henry M. Brickell 33

TECHNOLOGY AND SCHOOL IMPROVEMENT: A CASE FOR LINKING THE TWO
Allan L. Peakes 55

CHANGING ENERGY AND SOCIOEDUCATIONAL TECHNOLOGIES FOR THE 1980's
Arthur M. Harkins 79

APPENDIX A: Forum Program

INTRODUCTION

This document is a compilation of the major presentations at the first Bi-Regional Educational Improvement Forum in Atlanta, Georgia, November 19-20, 1979. The Forum theme was "School Improvement Through Regional and Interstate Collaboration." Educators from 13 southeastern states were invited.

The Forum had three objectives:

(1) to identify knowledge and technical assistance resources available to help educators identify and implement solutions to educational problems;
(2) to promote collaboration/coordination among agencies providing such assistance to the region's educators; and
(3) to identify and link together educators addressing common educational improvement needs.

The Forum itself was a collaborative effort between several resource agencies serving the Southeast. These included the Department of Health, Education and Welfare, Regional Offices of Educational Programs, Regions III and IV, in Philadelphia and Atlanta, respectively; the Appalachia Educational Laboratory, Regional Exchange and Regional Services, in Charleston, West Virginia; and the National Diffusion Network Technical Assistance Base, Regional Service Unit III, in Orangeburg, South Carolina. In addition, the Research for Better Schools, Regional Exchange, in Philadelphia, was a cooperating sponsor.

The Forum program focused on three strands of school improvement: State Department of Education delivery systems, local validation practices and regional resources, and the use of technology to improve schooling. Papers contained here deal with two of these.

In Section I, state department delivery systems are discussed by Dr. David P. Crandall of The NETWORK, Inc., Dr. Doren L. Madey of NTS Research Corporation; and Dr. Charlie Williams, South Carolina's Chief State School Officer.

The use of technology in school improvement efforts is discussed in Section II, which contains presentations by keynote speaker Dr. Henry M. Brickell of Policy Studies in Education, Dr. Allan L. Peakes of The World Future Society, and Dr. Arthur M. Harkins of the University of Minnesota.

Validation practices and resources were discussed through participant interactions in two concurrent sessions. Therefore, no formal papers are included from this topic area.

People wanting further information about the materials contained here or presented at the Forum may contact one of the Forum sponsors named above. A copy of the Forum program is contained in Appendix A.

SECTION I: SEA Delivery Systems for School Improvement

A STUDY OF DISSEMINATION EFFORTS SUPPORTING SCHOOL IMPROVEMENT: FOCUS ON STATES

David P. Crandall

Today I'd like to share with you some aspects of a major effort now underway at The NETWORK. It's called "A Study of Dissemination Efforts Supporting School Improvement." The three-year study began a year ago, October, with support from the U. S. Office of Education (USOE).

The study has many facets. My remarks today will deal primarily with the state-level activity.

We're interested in looking at two principle foci. One can be thought of as the transformation of policy; that is, people in Washington or the state agency formulate a policy that is intended to be acted out by people at some level below them. By the time

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Dr. Crandall is executive director of The NETWORK, Inc., of Andover, Massachusetts. He also is principal investigator of a nationwide study that is looking at dissemination efforts that support school improvement. His presentation deals primarily with the state-level activity of the multi-faceted study.

gets communicated down through the ranks to people in local schools or to people in state agencies, there has probably been some substantial alteration in the conception and perception of what the policy actually is. We'd like to understand the dynamics of that alteration. It is our belief that, as a result of not understanding why one level transforms a policy as it enacts it, the people who formulated the policy think they have failed, when they may well have succeeded; they just don't know it. Most social improvement programs and most school improvement efforts that we've heard about, are tagged as failures. If we look at them in the slightly different light, it may turn out that there are more successes there than we think.

The second focus of the study is on implementation of group practices at the local level. This study was originally called a study of federal and state dissemination activities and has now been formally redesignated as a study of dissemination efforts supporting school improvement, with primary concentration on implementation at the local level. We have four primary objectives. Again, I want to just run through these quickly.

First, we're to provide basic descriptions of policies and practices in selected federal and state programs designed to encourage schools to try out alternative practices and materials.

Second, we're charged with testing assumptions about the casual relations at work in the implementation of school improvement policies.

Third, we're going to assess the relative impact of selected policies pursued by USOE programs.

And finally, we're going to provide policymakers, program staff, external agents and educators with the knowledge to make direct applications of our findings to their work.

To achieve these objectives, we are looking at programs that represent four different approaches to school improvement: the National Diffusion Network, which includes a special look at Follow-Through, as well as a concentrated set of Title I schools; the Bureau of Education for the Handicapped Marketing Program; state administered programs, meaning those efforts administered at the state level concerned with dissemination to schools for the purposes of improvement; and fourth, in contrast to the first three, class IV-C or Title III development efforts in local schools.

Across these four major strategies, we will be visiting approximately 165 schools around the country. We'll also be collecting data at three other levels: the external agent level, i.e., people such as state facilitators, developer demonstrators, state agency personnel, and RDx individuals, who would be helping schools try out a new program; state level personnel sponsoring the efforts; and federal policy makers and program managers.

The study is concentrated on schools in 10 states. The 10 states are drawn from a sample intended to be representative of the continental United States and ranges from Maine to California and Arizona. We have a mix of urban and rural sites, including states with substantial past involvement in dissemination, and many that are fairly recent players in the arena.

The sample of respondents includes approximately 400 teachers in schools who can be classified as users, as well as 2,000 other teachers in these buildings. In addition, the building principals, other administrators in the building and district, and the school board will also be interviewed during a site visit.

In this state-level aspect of the study, there is a concern to better understand whether support from the federal level directly to schools works differently in terms of school improvement outcomes, than those activities that are supported and administered at the state level. This one stream of activity is specifically targeted at understanding what is going on at the state level and how that influences activity at the local level. More particularly, we're asked to look at the coordination between OE and SEA dissemination activities in order to help the federal government work with the SEAs to become more active partners in dissemination.

Within the state-level study, we expect to be talking to between 12 and 15 individuals in each state, using a semi-structured interview. Our field researchers are just entering the field this month (November 1979) and will be involved in data collection and report preparation between now and summer of 1980. Their interviews with state department personnel will focus upon. the political geography of the state, state department program goals, the SEA organization, its dissemination as it relates to the federal people, where they get the practices that they are disseminating, their nature, how they select them, what vehicles they use, what kind of technical assistance they provide, what sort of relationship they maintain with people at the local level in the course of implementation, how they relate to other dissemination activities going on in the state, what sort of evaluation and research activity they conducted in conjunction with the dissemination work, wnat the expectations are for dissemination work, and what other kinds of core assumptions are held by key individuals in the state about dissemination for their schools, for their state, and for the nation as a whole.

Let me emphasize a couple of these. We are increasingly recognizing the importance of what can be called the political influence on dissemination. That plays itself out at various levels. Within the last two weeks a small drama occurred in Washington, when there was an attempt to reprogram moneys originally appropriated for the National Diffusion Network to another governmental priority. That particular effort did not succeed, but the attempt was there and, presumably, there'll be others at the federal level. We have more positive activity occurring in many states, where a good relationship with the principle political players has proven very beneficial to dissemination and school improvement. Just last Friday in Pennsylvania, Secretary Scanlon addressed a congress of some 2,000 educators from across the state and launched a major school improvement initiative. Efforts in Illinois over the last few years have been aided by a solid relationship with the legislature. Increasingly, we see trends toward recognizing the need for attending to both the current political climate and to the history that may have led to certain kinds of structures and configurations. Describing the positive contributions that these have made is an important aspect that we hope to explore in the course of the study.

We also hope to understand better the structure that is at work within the SEA. Already, it seems clear that there are a couple of different ways that states organize for dissemination. The two poles of the continuum seem to be: (1) an organization arranged around the categorical programs that provide money from the federal level (such as IV-C, handicap, vocational education, etc.), and (2) some sort of a formal coordination through a dissemination unit or function. Between these two, there seem to be attempts to create intra-system structures or networks of personnel with dissemination responsibilities. Our interest is in understanding these various organizational structures to see how they relate to the successes of schools that are trying to improve their classroom practices. Embedded in this question is the issue of the relationship between the state facilitator and the other dissemination activities in the various states. As I said before, we're quite interested in looking at the points of contact, connections between or disconnections between, the federal and state players in the dissemination arena. How do people in the states find their work facilitated by policies that come from Washington? What types of assistance from the federal level would be beneficial? What congruents or discrepancies exist between views of schools, schooling, school improvement, etc?

In addition to the kinds of questions that I've highlighted here, there seem to be some issues emerging that might be worth pondering during your small group sessions in the afternoon. We seem to see varying images of dissemination emerging. This is one very tentative thing that isn't called a finding, but more a phenomenon that characterizes the variety. There are those people who take a very technological view of the world and see dissemination as a transfer of information. There are others who have a somewhat evangelical point of view. They are a growing group of folks who have discovered that there is good news, and they are spreading that word. And in doing this, they are increasing the size of the flock in proportions that have heretofore been unpredictable.

There's a third view of dissemination that's a somewhat classic one in arenas other than public education, where matters are viewed from a marketing perspective. The service delivery image is perhaps the one that seems to dominate the view of people operating in the state agencies. In this view, the SEA relationship to local schools seems to be an overall, ongoing one with a fixed constituent group, with the states offering a broader range of services than might be sought by a simple dissemination system.

And lastly there are whose who see dissemination as a new profession. They define it rather broadly, but talk about it in ways that show concern for career development, security, and alternatives to conventional bureaucratic roles.

I want to stop here with some deference to time. My hope is that, in the course of the afternoon's small groups, some of these themes, topics, questions, and issues may come up again either because they don't ring true or because you aren't clear on how they relate to you. I urge you to convey your comments and questions to me directly during the day and/or pick up the phone and give me a ring. As I said, we are attempting to maintain an active communication and collaboration with people in the field during this study. I hope to hear from some of you.

STATE DISSEMINATION GRANTS PROGRAM: A LOOK AT SEA DELIVERY SYSTEMS

Doren L. Madey

I'm both pleased and honored to be here today with all of you who are interested in facilitating educational improvement. We share a common and important goal. Bridging the gap between producing knowledge and putting it to use has been the purpose of many recent federal, state and local efforts. You've already heard about some of them today. Did you know that approximately half of the multi-million dollar federal investment in education is allocated to various strategies for improving educational practice? This federal effort is paralleled by actions at the regional, state,

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Dr. Madey is co-director of the National Institute of Education-funded study of the State Dissemination Grants Program. The study is being conducted by NTS Research Corporation, Durham, North Carolina. Dr. Madey's remarks include a description of the grants program, its components and essential ingredients, and recommendations for enhancing existing SEA delivery systems.

and local levels to facilitate educational improvement. This bi-regional educational improvement forum is a commendable example of one such collaborative effort.

SEA delivery systems for school improvement are other ways of bridging the gap between educational research and educational practice.

As director of the NIE-sponsored study of the State Dissemination Grants Program, I am familiar with SEA delivery systems for school improvement in over half the states in the country. The purpose of my presentation today is to describe these SEA delivery systems. I would like you to leave this forum with a more comprehensive understanding of ongoing SEA dissemination efforts and some concrete ideas about what you may do to improve your own SEA delivery system. By sharing with you information about these systems, I hope you will be able to further bridge the gap between educational research and educational practice.

My presentation this afternoon is divided into three sections. First, I'm going to describe the program to you so you know the source of my descriptions of SEA delivery systems. Then I want to describe some common generic components that I believe are essential to SEA delivery systems. Finally, I'd like to close with some recommendations for enhancing your own SEA delivery system.

My presentation is derived from two documents that have been prepared as part of the study of the State Dissemination Grants Program. The first "The State Dissemination Grants Program: 1978

State Abstracts with an Analysis Across the States" contains summaries of dissemination activities in 29 SEAs throughout the country.

The other document is still at the printer's. It is an interim report of our study of NIE's State Dissemination Grants Program, and it should be ready in a week. I will take requests, or you can send me a note and I'll send you copies of that as well.

Many reports describe what SEA dissemination systems should look like in theory. The two reports I've just mentioned will describe what SEA dissemination systems look like in practice. I will be using some transparencies to highlight important points, and throughout my presentation I will be using the terms "SEA delivery system," "SEA dissemination system," and "SEA dissemination capacity" as synonyms. I've defined all three of these terms as the resources, services, and institutional arrangements an SEA develops, implements, and institutionalizes for dissemination to improve local practice.

An SEA dissemination system may extend beyond its organizational boundaries to include other organizations with which the SEA cooperates in providing needed services or resources for dissemination. That's the whole theme of this forum--interstate or regional collaboration--and it's true within the state as well.

We've also defined dissemination. It's a two-way process for communicating educational needs and problems and facilitating consideration and use of educational knowledge for the improvement of local educational practices.

Let me quickly describe the program to you. The State Dissemination Grants Program began in June of 1975 and is still operating today. It developed from prior research in the area, and one of the things the program does is provide capacity-building grants to SEAs to strengthen their ability to provide dissemination services to their clients. Currently, 33 states have received capacity-building grants through this program. The grants average $100,000 a year and typically last from three to five years, usually five. So a state gets $500,000 over the course of five years to improve its SEA delivery system. Ten of the states represented at this forum have capacity-building grants.

All SEAs participating in this program are responsible for developing and institutionalizing SEA delivery systems comprised of three components: a resource component to make materials and products available to practitioners; a linkage component to help educators seek and use knowledge and knowledge-based products; and a leadership management component to coordinate the numerous federal and state dissemination programs at the SEA levels so local practitioners can easily access and use any and all resources. These three components, information sources, linkages, and leadership, I believe, are generic to any SEA delivery system for school improvement. States may differ, but this does not negate the need to develop across all states increased capability in these three components--the cornerstones of any SEA delivery system.

That's a brief description of the program; the 1978 abstract document goes into much more detail than I can go into here.

What do these systems look like? One of the things we did to aid in examining SEA dissemination systems was to develop scales that would describe state dissemination capacity in a concise and meaningful way. We collected information on hundreds of variables from 29 state education agencies. Six scales were developed: comprehensive resource base; comprehensive linkages; available linkages, products, and services; coordinated resource base; coordinated linkages; and institutionalization. You may want to think of the scales as thermometers for measuring dissemination capabilities of an SEA. Placement on the scales does not connote good or bad. It just says that this state is located here. We have to do more work before we are able to say that's where it belongs.

One of the things that I'd like each of you to do as I go over the scales is ask yourself, "Where is my state and where am I going? Where would I like to be?" In the interim report, we describe these scales in detail.

The comprehensive resource base scale reflects a lesser degree of diversity than was apparent in the overall context of the 29 states we studied. States use a wide range of resources in responding to requests for information. This scale describes the state's pattern for utilizing the components of a comprehensive resource base. In general, the first resources states typically put in their resource base are those that are nationally available such as ERIC, followed by resources from SEAs, LEAs, intermediate agencies, and then institutions of higher ed.

All projects have access to two resources--ERIC and the National Information Center for Professional Education Materials. These resources are federally funded and, thus, may be relatively easy or inexpensive for states to access. Together, these two resources have provided a base upon which comprehensive sets of resources have been developed. Other resources typically available include National Diffusion Network products and other SEA products.

Variation is evident in the state definitions of comprehensive resource base. For example, some of the SEAs have indicated that they will develop or provide access to a human resource file. Others have contemplated development of such a file and then reconsidered, usually for cost and confidentiality reasons. Similarly, some projects do not view legislation and regulation information as part of their comprehensive resource base.

Your view should be that client requirements and client demands are the major determinants of whether comprehensiveness is achieved. Comprehensiveness is not dependent upon, nor does it require or disallow, any particular type of file or resources. In other words, variation is not only possible, but expected.

The resource base configurations that we've studied reveal that states take one of two approaches to capacity-building. Either projects attempt from their beginning to provide any possible service to every possible educator. We call this the generalized approach. Or, projects start by targeting certain people or topics and then expand. We've labeled those target topics and target people approaches. Our evaluation findings to date reveal that the most developed SEA delivery systems are those that start with a focus, either targeting people or targeting information, and then expand, as opposed to trying to serve everybody from the start.

One of the other points I want to make about the resource bases is that SEAs don't necessarily have all their resources assembled in one place. They could be dispersed throughout the agency or throughout the state. An important point to remember is to explore resources available to your SEA that could enhance school improvement through regional and interstate collaboration. Use your regional exchanges; use the OE regional offices; use and link up with OE programs and other offices within your agencies. Build, borrow, and steal from other states' experiences. We're all learning together; we might as well use the resources that are available to us.

Comprehensive linkages is another scale that we developed. We defined linkage activities as those services which facilitate access, acceptance, and successful utilization of knowledge resources. Here again, there is a lot of variety. Part of that variety is a result of people's building on existing structures. They're increasing their capabilities of those already in the field, enabling them to do their jobs better, thereby reducing costs. Using what's there is cheaper than creating a new linkage system.

States are using two main streams of linkages in the field--people and media. Typically, in the SEAs studied, the first people to become linkers were dissemination specialists--the Title IV-C staff, NDN staff, and those people who were directly involved in some projects. Later on, to increase the ability of people to get to local schools, curriculum consultants within the agency became linkers. Then that expanded to other people such as intermediate staff or school board members.

In media, states started with print-based and expanded into multi-media type linkages. It's very important, again, to emphasize that any SEA's linkage component will vary with the state's definition of which groups of people it wants to serve. You try to find the natural linkages that would most effectively serve whomever it is you've identified as your clients. This is reflected in the different configurations we've studied in the 29 states.

It is an important point to tell you that only two states actually created new linker positions and paid for them with capacity-building monies. Most states have tried to enhance existing linkages by working through the NDN program and by increasing staff's skills. If you can make people think they need the linker training as much as they need a pencil and paper to do their jobs, you're a lot better off.

In essence, I have told you the essential parts of both the resource base and the linkage components of an SEA delivery system. Now let's discuss the kinds of linkages, products, and services that are available for clients. One of the most exciting things, to me, deals with the roles that linkers play in education. What we discovered was that, when SEA delivery systems are just beginning, it is more likely that the linkers associated with the program will be resource finders. The first thing you're going to do is get information, or help collect and organize information, and you think of a typical librarian or an ERIC person working in an ERIC Clearinghouse as a resource finder. As states become more sophisticated and as client needs become more sophisticated, they realize information alone won't do the trick. The linkers become solution givers. They roll up their sleeves and help implement programs in local schools. Finally, they become process helpers. These are the people who actually help others think through the process of change so that they, themselves, can then carry on and work with any educational improvement problem.

Sophistication also plays a part in the development of the services offered. Originally the program refers clients to services but does not pay for the services. In other words, the clients pay for the services themselves. As they work toward coordination, the SEAs work out collaborative arrangements and plans within their agencies, so that the project can refer and, in essence, help pay for client services. It becomes a more coordinated system.

In closing, I want you to keep in mind six steps for improving your own SEA's delivery system. First, you should explore the SEA organization and available state, regional, and national resources that you can share with, cooperate with, or collaborate with to help reach that ultimate goal of improving local practice.

Second, you should identify key actors of dissemination within your SEA, your state, and your region, who can help you get your job done.

Third, you should share goals. This session is a good place, perhaps, to do some of that.

Fourth, it's really important to develop intra- and inter-agency agreements. Those states that have comprehensive, written dissemination plans move along quite well and quite rapidly in their goal of an SEA delivery system for the improvement of local practice. It's really important to put down some of those ideas in writing.

Fifth, establish an implementation schedule. You've shared your goals, you've written them down. Now come up with some time lines for achieving some of those goals.

Sixth, and probably most importantly, share credit for the accomplishments. View it as doubling the exposure rather than splitting the credit. The theme for this whole forum is sharing, collaborating, and cooperating, and it rings true within your own states. There are a lot of people out there with the same goal--helping Johnny and Sally learn better--and, by working together, we can do that.

BUILDING AN SEA DELIVERY SYSTEM: ONE STATE'S VIEW

Charlie Williams

Let me take just a minute to put into perspective some of the things that we're talking about. We're talking about bringing about change in the system without, first of all, taking a minute to look at the system. What I say applies to most state's systems and, specifically, to the system as I see it in South Carolina.

Something that I haven't heard mentioned to this point is the uniqueness of America's system of educating its youth. We seem to have gotten into a discussion about how to change it without looking at the fact that we have four delivery systems: a private delivery system, a parochial delivery system, an emerging family delivery

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Dr. Williams is South Carolina's State Superintendent of Schools. He gives his perspective of issues confronting American education and a review of several efforts underway in South Carolina to improve the education delivery system.

system and the public education delivery system. In the family delivery system, some states have identified criteria for approval, and families are now petitioning boards of education for the right to educate their own children. I was in a meeting last week with the other Chief State School Officers throughout the nation, and one reported that, although he had had only a couple of cases last year, this year 66 families had already petitioned the State Board of Education to educate their own children.

The system of public education is dependent upon the willingness of the American taxpayer to support it. That system is most unique within the systems, because we are historically a nation of free enterprise, where each person is responsible for providing his housing, health care, or any other service. We're basically a free enterprise system, but we have a basic educational system that depends upon public will and public support. The American education system is now under serious attack from at least three directions. One, there is outright opposition to public education. This opposition is consistent with the concept that we're a free enterprise nation, and everybody ought to be held accountable for educating his own children.

Two, there are those do-gooders who want to help the system and truly set out to do that with all good intentions, but don't fully understand the complexity of American education, particularly American public education. They want to straighten out one little piece, without seeing the complexity of the system. The third element is education itself. Public education is newsworthy. What you do, right or wrong, particularly the wrong, is a newsworthy item. And when you have the do-gooders who, in some cases very legitimately, point out a specific incident or little flaw, it gets blown out of proportion. Again, American education, and particularly American public education, is a unique system in all the world for trying to educate the next generation of children.

There are at least three factors affecting education tremendously in my state. First, we've had a tremendous adjustment of moving from a system of exclusion to a system of inclusion. We've excluded poor children, black children, handicapped children, disadvantaged children. We've operated a middle-class, college preparatory system. In the past several years, we've undergone a tremendous shock to the system. You keep hearing the adjustments to 94-142 and all that's heaped upon us. But again, if you look at what's happened to us, we excluded those children, methodically and systematically, through all of time until the federal government moved in and said, "these children can no longer be excluded; they have to be included." The resources that we were not sharing for the education of those children had to be redirected, personnel had to be redirected, and the system underwent a shock not unlike being thrown into a pool of cold water.

You hear a great deal of the discussion about 94-142 and, in truth, it's a little bigger issue than that. It's a fact that the system of education, because it excluded these children, got federal legislation and regulations that are more prescriptive than anything that we've ever known. It's because we hadn't done our own job. We hadn't done it very well. So, consequently, we now have a system that's put in place for us. Our problem is really not to fight the system, but to face up to the fact that we brought this on ourselves. We had the similar adjustment in excluding black children from the system. Through civil rights legislation, it became evident that these children could no longer be excluded under a concept of "separate but equal" and had to be brought into a unitary school system to receive the same education as all other children. That has been a shock to the system. It's a shock to systems having to face that reality today.

I cite all of this to say that the moving from a system of exclusion to a system of inclusion has caused some tremendous adjustments in the system of education throughout this nation. It is those adjustments that are occupying a great deal of time, thought and resources of many state and local school districts.

Second, we're involved in an economic decline. We have a battle going on between the rich and the poor, the affluent and the non-affluent. There's more and more reluctance from those who have to share and to be willing to give any more of their dwindling resources back to a system of public education. It's impacting the system of education; the economic decline of this nation is getting caught up in the likes of Proposition 13.

Third, there is another factor that's affecting all of us, and that is the loss of confidence in public decision makers. It goes back a long time and is particularly accelerated under the concept of an economic decline. The people who make decisions affecting the public of this nation are being challenged. The decision makers in public education are being challenged mostly because they are more easily found; they can find me in South Carolina without any difficulty. But that's just a part of the syndrome; there's a loss of confidence in public decision makers and it's impacting that portion of the delivery system of American education called "public education." Within this unique system of education is a series of decision makers, decision shapers and decision influencers--the people who feed information, ideas and materials into the decision-making process. But we get caught up thinking that everybody's meddling in everybody else's business. At the state level, we think the legislature and the federal government are meddling in our business. At the local school district level, the school board thinks that the state department and the state board is meddling in their business. The superintendent thinks the local board is meddling in his school district. The principal knows the superintendent is meddling in his school. The teacher knows the principal's meddling in her classroom. And the parents really can't figure out what we're all doing about it.

In the concept of a unique system of education, there is a legitimate role for a lot of people to make decisions. We don't really face up to that, but in American education, it was never intended for any one person to make all the critical decisions affecting our lives. American public education is structured for a shared-decision-making role. I'm not sure that we've clearly accepted that. We talk about local control as though the American system of education meant for somebody at the local district to make all the decisions. It was never intended in American education that you have complete and isolated local control. Neither was it ever intended that every state would have complete and autonomous control of the educational lives of people. It's a shared decision-making process. One of the things we have to face is the fact that there are people, other entities within the system, with legal, legitimate roles for decision making. We in state departments have to respect those roles and do the part we're legally charged with doing, and that's carrying out whatever responsibilities are spelled out for us.

Another observation I would make is that few people want to change. As I heard expressed recently, we seem to be mesmerized with the seeming stability of the present and not able to look down the road far enough to see the need for change. We're talking about a sensitive, complex system for educating a nation's or a state's youth. There is a wide array of players and decision makers in the process, all of whom are more active than ever in the history of American education; few of whom truly want to change what they're doing now. It's within this framework that we're talking about changing the system, and that's why this meeting, incidentally, is so meaningful and worthwhile. It calls for collaboration and cooperation between the decision shapers and the decision makers. That is what we've probably been missing in a great deal of our efforts to try to improve the system.

Now let's talk about what's been happening in South Carolina to foster change in the education delivery system. Let me start with at least three efforts that I've made since becoming State Superintendent. One of the first things I did was to set up a series of listening sessions around the state in six major cities. We drew a representative group of classroom teachers, principals, school board members, parents, and advisory council chairmen. We gave each of these groups an hour and a half's time. These groups were not mixed. It was a group of parents by themselves, a group of principals, and so on. We went into the meeting place with really just two messages: One, a disclaimer that we weren't coming in our usual mode of operation--to bring the truth, the way, and the life; and the second, we had one question, "What's bothering you about public education?" We heard from 1374 speakers who presented their feelings, ideas, and desires about public education. The one topic mentioned most often is something you might plug into your thinker; it was a desire to know more about the system of public education.

We operate almost in isolation, and that's particularly cogent if you accept even partially my other remarks about the complexity and the dependence of public education on public support. We operate in isolation from the people who have to support us, and, while we know what we're doing to some degree and we know how important it is, we leave out the key element--the people that must support the system. It was mentioned 59 times throughout the six days that we went about the state, listening. People want to know more about the system of education, how decisions are made, how text books are selected. People don't fully understand how we go about our business, and it's obvious that it was of real concern.

Second, in my first meeting with the State Board of Education, I announced a plan to launch what I call a crusade for better education. That's the term that I've given this effort, and I am fully convinced that a seminar, conference, or meeting simply won't do the job in our state. It's going to take all of the entities that I just discussed, finding common ground they can agree on, and getting behind some specific activities to provide a better system of education.

I appointed a 74-member task force representing all of the decision makers and decision shapers that I could identify. They serve on this select panel to do two things: identify the most critical problems confronting us as a state and identify solutions to them. After about three months, we came out with 14 critical concerns, and now we're approaching the question, "What can we do about it?" The crusade steering committee came up ith 49 suggestions in terms of what local school districts, the state department, and the legislature could do to improve the communication system, the number one critical concern. We're now moving on with the other 13 critical issues, to do the same thing and identify what can be done about them.

The third activity I've launched since assuming this role is a regular broadcast over our instructional television network. It is run by a separate commission, not by the Department of Education. They've given me 30 minutes of prime time every other Thursday evening. We're developing a program called "Focus on Education." Last week the topic was "Volunteers in Education," and focused on one small PTA that had raised $12,000 to air condition all of the schools in that little school district. Now that's active citizens' participation.

I think we have a rather clear record of supportive change in the educational program. The real challenge is that we not oversimplify the task. The task is complex but basically it boils down to getting the right information into the hands of the right people, and there is no single way to do that. As I touch on the things that we're doing, I think you'll see that we have not attempted to find any single way to bring about change. The first mechanism that I would mention is our National Diffusion Network facilitator project. Our NDN project, in conjunction with our Title IV-B funds, is probably the most effective agent we have for instant change. We've coupled these two together to make one of our modes of Title IV-B money available under an adaptation, so that the school districts are notified of those projects that have been identified through the network. Since we linked these programs together, we've been able to move programs into districts that heretofore were not able to participate under our delivery system.

We also have, under our capacity-building grant, an office we call the Educational Products Center, that makes available not only computer searches, but products that are available at the local school district level. The Center operates through a network of contacts in the local districts, who contact the Center for specific information. It's been one of our major efforts. I'm trying to underscore that I don't honestly believe that there is any simple way to effect change when you're dealing with the masses of people in a delivery system of education, some of whom will always be ready and willing to change, some of whom will be most difficult to change, and some of whom are probably impossible to change. I have grave reservations about looking for a simplistic mode where one body or group can have responsibility for change.

We have a third element in our general education program that would ordinarily fall under the curriculum specialist mode. We have put together a booklet that we call "Making a Difference." What we do is offer to the school districts a team of people in the curriculum areas of social studies, science, reading and math. Then through procedures outlined in the booklet school districts are forced to set objectives. The district must decide, grade level by grade level, what it really wants to accomplish for its students in the above curriculum areas and come out with a sequential order of objectives. Once objectives are agreed upon, district staff looks at the instructional methodologies, materials, and programs that will most likely be effective for them, and for what they want to achieve for their children. The third step is to train the people to implement and utilize the materials identified to reach the objectives. Through this process, we've been able to bring about a more lasting type of change by helping districts work through their own objectives for their children, get these in written format, and then start looking at delivery instructional modes. We've moved from an on-call resident expert delivery system, where experts sit in the state office and wait for somebody to call them to come and help put out a fire. Now, we go out as a team, looking at the total curriculum and working through the objectives as a team of people reinforcing each other.

The "Making a Difference" process really has made a difference in school districts. It works because people decide their objectives before they look at the methodology.

A fourth method we use for bringing about a change is in the Department's Accreditation and Educational Improvement Section. Not only do these staff go out and assess whether or not minimum standards are met, but they also assess what can be done to improve the system.

Another useful change element is the department's large staff of vocational education specialists. Few school districts have specialists in vocational education. They depend upon the state staff for the in-service training. Historically, the state agency has provided the leadership for change in the vocational field. We have a network similar to the "Making a Difference" process. Here I go back again to the premise that if you're going to bring about change, you put the right information in the hands of the right people. And vocational education people talk to vocational educators. They don't talk to the general consultant. They will speak to me occasionally, but they'll talk to that vocational staff, and those are the people who, in my opinion, are going to have to take the message and methodology to them. I don't think there's any single office I could create in the Department of Education that the teacher-on-the-line is going to listen to more than his or her counterpart who came out of the classroom.

We also have a rather elaborate system of educational television in South Carolina. The facility and the production are controlled by a separate commission, but the selection of materials to reach students is controlled by the Department of Education and the teacher in-service training. We offer college credit courses, as well as certificate credit courses in the afternoons and evenings for people who don't have access to colleges or universities.

One final effort in our state is to urge the legislature to become more actively involved in conducting their own business. In 1977, we passed a finance reform act called the Education Finance Act of 1977. In addition to establishing a minimum level of expenditure for every child out of joint local and state funds, it created an accountability section that calls for an advisory council at every school in the state. These councils are advisory, but they have a clear legal responsibility to review the local program of instruction and make recommendations for change. The law also requires that annual school reports be submitted to the local board and to the State Department of Education.

Our staff in the Accreditation and School Improvement Section studies the advisory council's report during its site visit.

In summary, if you piece together the efforts that I have reviewed, you will see that we haven't looked for any single delivery mechanism to bring about educational change. We share the responsibility, remembering to put the right information in the hands of the right people.

SECTION II: Technology and School Improvement

EDUCATION IN THE 80's

Henry M. Brickell

One thing you can count on in the future is more affirmative action. A friend of mine got a questionnaire brought in to him by his male secretary. He handed him the questionnaire and my friend said, "What do they want this time?" The secretary said they wanted a list of staff members broken down by sex. He said, "Give me the questionnaire," and wrote across the top, "We do not have any staff members broken down by sex. Alcohol is our problem."

A keynote is intended to bring all of the musicians together in harmony charging into the future. This keynote may put you in disarray and send you charging into the past, but you have to live the rest of your lives in the future, so you should know about it.

Dr. Brickell is president of Policy Studies in Education, New York City. His keynote address reviews social and educational changes likely to take place in the 80's.

Besides, your interest is in change and improvement, and the future will bring lots of change and lots of chances to improve. So, let's walk up to the horizon and look beyond it bravely.

This will be a helicopter trip, a fast one, over social and educational changes. And the helicopter will settle down in a few places where I think you're likely to spend part of the future.

Fortune has commissioned a series of demographic summaries, and I have been reading them, because I'm not a demographer. The article points out, among other things, that we added 45 million people from the mid 40's to the mid 60's. Never in history have we had a population growth at that rate. *Fortune* says that these new citizens overloaded educational institutions, subjected society to the excesses of the youth culture, shoved up juvenile delinquency and crime rates, and boosted national unemployment averages, calling forth government programs to deal with these young people. Sound familiar?

The most dramatic change of the decade ahead, the 80's, will be the sharp and continuous decline of people between 15 and 24, who, during the latter half of the 60's, increased in numbers four times faster than the national average. Looking ahead, the most popular segment of the society will be people between 25 and 44. We're going to move from being young to being middle-aged. Happily, *Fortune* says we're going to keep on growing. Not to grow is depressing. West Germany is suffering negative population growth. Happily, we'll be adding about 2 million people a year and that's likely to keep us optimistic. Average population age will be from

28 in 1970 to 32 by 1980. Life expectancy will continue its rise. Think about this: Half the children born next year will live beyond 73 years. There'll be more senior citizens, of course, in the 80's but they'll hold their own and be around 12 percent of the population. What you're going to have is more workers, and fewer people at either end of the spectrum depending on them. That will be good for economy. The nation's adults, already among the world's best educated, will continue to accumulate more and more. By 1985, more than three out of four people in the labor force will be high school graduates; one out of five will have completed four years of college. The value of education, however, will drop. Ten years ago, college graduates made 50 percent more than high school graduates. Today they make only 33 percent more, and a lot of high school graduates have figured that out.

Restless Americans will keep on moving from town to town. The kids you teach this year won't be kids that were here last year. The ones that you have this year won't be here next year. Twenty percent of the people move every year, 10 percent within their own cities and about 10 percent between cities. That's going to continue. The sun belt will continue to soak up the population of the snow belt, drawing people away from the declining cities of the northeast and the farm lands of the midwest. The south adds a million people a year these days. That's half of the national population growth; a third of that winds up in Florida. The south got 1300 new industrial plants last year alone, 200,000 new jobs, mostly through expanding industries that moved here earlier and are succeeding. More people will avoid big cities. They won't just live in Atlanta. They'll live throughout Georgia--suburbs, small towns and villages, even rural areas. And state planners, in this area of the country particularly, will try to spread the population away from the central cities. Immigrants--we've always had some--we're going to have some more. A half million newcomers arrive every year, keeping the ranks of the legal registered aliens above a million, and the ranks of the illegal, unregistered aliens somewhere between 3 million and 12 million. Nobody can catch them to count them. They're going to be more but no one can estimate how many.

Well, let's talk about the women. The women's liberation movement will continue to roll forward throughout the 80's. The success of it will be most evident by the rising number of women in paid employment. There are many statistics that express it. Take all of the women over 15. Half of them are employed. Take all of the female college graduates of last year. Seven out of eight went to work. We added 3 million jobs last year nationwide, an historical record. Two-thirds of the jobs went to women. They make up half the labor force now. Over half of all women of working age are employed or looking for work. The number will grow steadily all through the 1980's and beyond. There are three powerful factors. One is economic pressure on families that necessitates a second income. Another is the spreading expectation that women should do more than maintain a home. It's not just a need for money' it's a changing picture of what a woman should do. And another is the growing desire on the part of many women to lead active and productive lives in the economic mainstream. They'll be having babies later. Fortune says inflation is a great contraceptive. Of the women aged 25 to 35 entering the work force, over 70 percent are mothers with dependent children, despite the problems of doing both at once. So balanced life for married women, with or without kids, is coming to be thought of as combination of a home life and a work life. Most women will work for pay. Some will work as volunteers. Incidentally, they make 60 percent as much as men, even less than men make for the same kind of work, so you can always economize by hiring women and do good for the society. You want some anti-inflation advice. Listen men, last year they got 25 percent of all the law degrees and 25 percent of all the medical degrees. So they're going to close that gap, right? With these salaries, you know they can do it. Now they're going to be a growing force in politics, partly as voters and partly as elected, or appointed, officials with the Department of Education. They'll play an even stronger role in shaping public policy. And when they get on top, they will really roll the women's movement forward, no doubt.

And now for minorities. Racial and ethnic minorities will continue to rise in numbers. Hispanics lead the way, as you know, as the fastest growing minority. They will increase their incomes, their education and their political power. They're going to get better choices of jobs and better choices of places to live. But the minorities and the majority will still be here, and those concerned with public policy in the 80's will continue to intervene as they did throughout the 60's and 70's in an attempt to close the gap, or at least narrow it. The work force will continue this remarkably steady expansion we've had throughout the 70's. It will be up to 117 million workers by 1990. It's only 102 million today. We've added 12 million jobs since 1974, and cut employment by 2 million. That's the rate of new inference into the labor force--10 million people moving in to take 10 of the 12 million new jobs. There are going to be more part-time workers--17 million today; that's the fastest growing segment of the labor force. We'll continue to make work physically easier but mentally harder. It will contribute to a shift in the occupational mix--more professionals, more managers, more service workers and, as you know, fewer laborers and operators and crafts persons. Workers are going to be better off. They're going to work shorter hours, get paid more. Some of them will take their benefits in cash and others will take their benefits as leisure. The decision about whether to retire will seesaw between a desire to start the good life just as soon as possible and not quite being sure you could afford to start the good life. We don't know what the effect will be on retirement decisions, but public policy will try to delay retirement and keep these people at work so we don't have them bankrupting our social security system.

Inflation--I'll say as little as possible about this. It will continue to shrink paychecks, pension checks, savings accounts. It's going to tighten partly because of the slow rate of growth in worker productivity. We compounded worker productivity at 2 percent a year in the 1960's and earlier. But by the 1970's, the compounding was down to 1 percent a year. That's one reason you get inflation. We have not been able to increase worker productivity at the previous rate, partly because of redistributing wealth to a third of the world's countries and because of the rise in the prices of oil and ether commodities. Taxpayers in the squeeze will continue to resist the expansion of public services, partly because of the cost and partly because of the disenchantment with divisionary social programs we helped push in the 1960's and the 1970's. Foreign investment in the U.S. will grow, not just by the Arabs. Japan has about 4 billion in investments here today. It'll probably have about 20 billion by 1985. You send the money abroad, and it comes back to buy the country from you.

What about family life? Families are at their smallest since the nation was founded, and they're going to shrink more in the 80's. This year, 16 percent of the households consist of a working father and a mother at home with the kids. Twenty percent consist of just one person. So we have more one-person households than we have fathers and mothers at home with the kids. Sixteen million working women have children under 18. So, the adults are going to have kids later, and stop having them earlier. The smaller number of children will mean less necessity for public service programs for the young, like elementary and secondary education, just as the increasing age of the population will mean more public services for the elderly. It's very significant to have the wave of population sweep through the segment of eduation for which we're responsible.

Public services will have to expand as it moves up. Public services in education will shrink or stabilize after it passes through. The rate of divorce and separation--it seems hardly possible--will go up. More single-parent homes, more single-person households. We had 2 million divorced adults in 1955 and 8 million in 1975. They doubled their fraction in the population. Estimates are that half the kids born today will spend a meaningful part of their lives in single-parent homes. The number of unmarried couples living together doubled in the first eight years of the 70's. The separations are not recorded as divorce statistics, but the family disillusions go on nevertheless, and the unrecorded separations increase the trauma adults experience as they try to create satisfactory relationships. So you get serial marriages, divorce being followed by yet another try. We had 11 million widows in 1976. We will continue to increase the number of widows, because women are going to outlive men all through the 80's and all through the 90's.

Let's talk about teenagers. There won't be as many of them, but they'll be busy. The represent only 20 percent of the population today and that figure is shrinking, but they still manage to do half of the serious crimes, and have more than their share of automobile accidents. They've had an 800 percent increase in alcoholism; 60 percent are working full time or part time. Twenty percent of all children are born to teenage mothers and a fair number to mothers aged 10 to 13.

Leisure--I've said already there'll be more of it and we'll choose it in preference to high incomes and longer working hours. Part will go into recreation, part into education, and part into unpaid volunteer work. Thirty-five million adults were engaged in some kind of volunteer work in the mid 70's. It'll be higher in the 80's. Estimates are that the U.S. will have 65 million people in some kind of volunteer work by the end of the century. One reason is cash hungry government agencies turning to volunteers to fill in for services that they can't get taxpayers to support.

These social changes imply, and will bring, clear changes in education. Let's go over to the schoolhouse and look in the window. We're going to have more complaints from employers that college-educated secretaries can't write, high school educated production workers can't read, and nobody, they're going to tell us, can do arithmetic. There'll be steady growth in the ranks of the unemployed, a lot of them not having the skills needed to learn enough to get a job. We'll get the blame for that. There's a creeping suspicion out there that teachers are not as good as they used to be; a growing sense out there that the profession now cares more about teachers' paychecks than students' report cards.

School spending is up 50 percent since 1970. Oh no, that's after discounting for inflation. Paying more and getting less can make anybody angry. We're going to get some help though--the declining test scores, a cure, a technical cure, is in sight, when we re-average these tests. I always like to work in a little good news!!!

Let's talk about school finance, pressure on revenues through inflation, tax resistance. Most important, a shrinking clientele, with a growing clientele for other public services out beyond the ones we provide, as the population wave moves on past the years for which we're responsible. Anticipatory inhibition by government officials--don't ask for it and they won't vote you down. So, do Proposition 13 before they do it to you. You've seen that already, you'll see more of it.

In Administration we'll see accountability, efficiency, and a premium on spending the least and getting the most, and on being able to prove it. Good management rather than good leadership is likely to be the hallmark of the 80's for school administration.

In personnel we'll see a shift of emphasis. If 1965 to 1975 was the decade of the teacher, '75 to '85 is the decade of the citizen. Teacher power has slipped enormously. Board and administrative power has risen, at both local and state levels, largely for reasons I've already given--the shift in public attitude toward the schools, a shift toward the negative. The difference is already showing at the bargaining table; it's going to keep on showing. If '65 to '75 was teachers and students over administrators and parents, '75 to '85 will be the reverse.

Let's talk about instruction. Innovation has given way to evaluation as the main road to improvement, taking off in new directions and being replaced by taking stock of present directions. Planting has gone out; pruning has come in. The alternative schools of the 80's are more likely to be the fundamental schools of the 20's, than the experimental schools of the 30's and 60's. We'll come back to instruction shortly.

Let's talk about students again. Shrinking enrollments will differ somewhat by region and by city, the sunbelt will be up and some places will be building new schools as other places close them. But generally the trend is downward nationally. The only expanding market for education is adult education. I don't just mean adult basic education. We'll get innovation in the adult segment. We just completed a study of this frontier with the College Board. Considerable interest was shown among the 2,000 colleges who are members of the College Board. They're running out of high school kids, and they have to get customers from somewhere, so they have been rummaging around among the adults to see what the market looks like. We telephoned 1500 people, randomly chosen, and asked them if they had learned anything lately. These were adults 25 years old and over. Fifty percent said yes, I've taught myself home maintenance, I've taken a gardening course, bowling, insurance, religion, child care, private lessons in music, art, adult education classes, college courses, training at the company, a TV course, joined a study group at the church, learned tennis, taught myself cooking, sewing. Half of the adults said yeh, uh-hum, in the past 12 months. We asked them why, that was the purpose of the study. Eighty-five percent described some way that their lives had changed, and they were unable to cope with the change unless they learned; trying to move from one status to another and unable to go up the staircase without learning; learning to use the new machines their companies had bought; learning the histories of the churches they had joined; learning to take care of their aging parents in declining health; learning tennis now that they had moved to the suburbs; learning how to give up smoking when the doctor said so. They talked about how their lives were changing. Only 17 percent said they were learning for no life-changing reason, but because they found it satisfying or kept them mentally alert, or they enjoyed the social contact. Learning, then, is a utilitarian activity for Americans--always has been, still is, for these adults. So we concluded, as we had hypothesized, that moving from one status in life to another, moving successfully, requires you to learn new things whether you're going to be a foreman or a coach or an executive or a lieutenant, or a disseminator. You need to learn new interpersonal relationships, as well as new technical knowledge. Learning is the essential way to climb the staircase. It can be self-directed or other-directed, but one way or the other, we've got to learn. We also found that virtually everybody who experienced a life change could name some specific triggering event that caused them to learn at that time. My youngest started kindergarten, my eldest went into an expensive private college. I got divorced. Someone in the family died. I changed jobs. I got promoted. I got fired. These are the events that triggered adults' decisions to learn. Fifty-five percent of the changes took place in occupations, 15 percent in family, 15 percent in leisure, and 15 percent scattered over the other life areas. I say that that is the one expanding market for education.

Now let's look at other students, not the adults. Student spirit will be quieter, more serious. They're going to be more cooperative, partly because we don't have so many of them. Some facilities we're going to have to close, or rent, or put in storage, unless we can find new uses to educate the elderly or handle the millions of adults who want to keep on learning. If you look at state government, you're going to find more active legislators, state boards, and departments of education. There are going to be more controls by the state, without the funding to pay for them. Looking at standards for local performance, 35 states have minimum competency testing for students by legislation or state board action. And they're adding it for teachers.

At the federal government there is a continuing concern for minorities. We're a whole nation of minorities. We're always getting new ones--Hispanics, boat people. If you look over the federal government--let me pause on that for a minute. The federal level in education serves as a court of last resort. People go there when they can't get what they want from the localities or the states. You see, if they were the majority, they could get what they wanted at the local and state level. The landmark events, therfore, in federal legislation took place when the localities and states didn't give a vocal minority of the public what it wanted. I have a list of example. Smith-Hughes in 1917--vocational educators were a weak minority at that time. They joined the employers and persuaded Congress to take Voc-Ed out of the shops and out of the factories and out of the farms and bring it into the classroom.

This was after they had failed to convince the general educators to bring it in under the schoolhouse roof. Look back to 1862 and the Morrell Act, landgrant colleges, when the farmers and mechanics, a minority, persuaded the Congress that they ought to be allowed to come into the schoolhouse. Brown vs. Topeka in 1954--a landmark federal decision, when the blacks finally persuaded the federal courts that they ought to go to school with the whites--the point they had failed to make with the majority in localities and states. In the Civil Rights Act of 1964, the minorities again convinced the President that it would take more than Brown vs. Topeka to get the majority to follow the constitution. In ESEA of 1965, the disadvantaged made it clear that compliance was not going to be enough. It would take money, 2 billion dollars today, about a billion dollars back then.

The group that advocated education for all handicapped in 1977 is, again, a persuasive minority. Look at the Youth Employment Demonstration Projects Act in 1977. That time the Department of Labor convinced Congress that the vocational educators had become the majority and they didn't care about these kids, and the Department of Labor did, as it had already demonstrated with its work in CETA. And so, Congress, agreeing that vocational education was too important to leave to vocational educators, came up with a billion dollars.

What will be at the top of the learning agenda in the 1980's? We asked 1700 high school students, recent graduates, and teachers in Brown Deer, Wisconsin, to rank that on a seven-point scale. We asked them to distinguish what the kids should learn from what the schools should teach. There was a list of 167 items: good safety habits, think scientifically, engage in formal worship, protect the environment, compromise to settle disagreement, fundamentals of computer language, and 160 other things that you could leave on or scratch off the list. We asked the residents to rate them. What we found was a distinct split. By any one of the four populations, everything was more important to learn than it was for the schools to teach. In no case, was the full responsibility assigned to the schools.

A colleague and I used to walk the streets of Endicott, New York, with a clipboard, and ask the citizens how they wanted their kids to come out. They would say, honest, moral, happy. We'd write that down and go back and try to derive a school curriculum. We had trouble doing it because we asked the wrong question. We shouldn't have said, "how do you want your kids to come out," but "what piece of that do you want the schools to do?" Now, we did that in Brown Deer. We asked both questions separately. Moral education hit the top of the learning list and the bottom of the teaching list. Family living is very important, but not for the schools. And so the people sorted out how they wanted their kids to come out versus what they wanted the schools to do. They had no trouble putting family living, morals, ethics and values in on stack, and basic skills, citizenship, and thinking in another stack.

Let's see, the clearest I can make that would be to turn to actual results. Let's do it this way. We said to them, "Look the kids in the high school are very different, right? They're not equally bright. Of these 167 things, is there any one of them that you would require for graduation? Would you take away a kid's diploma if he couldn't do any one of these?" They said "no" to 154 and left 13 on the list--13 things that, if you couldn't do it, would mean no diploma. The top ranking item of the 13? "Computes accurately, adds, subtracts, multiplies, and divides." Ninety-eight percent of the residents wouldn't give you a diploma if you couldn't do that. The other 2 percent put the pencil in the wrong place. The teachers were not as sure about adding and subtracting; and only 96 percent of them would not give you a diploma. The graduates, 96 percent. The students were even less certain; only 92 percent of them would yank your diploma if you couldn't add and subtract. I said to the superintendent, "When the kids come across the stage, if you took one of the kids and said, 'Stand back, Allen. Now ladies and gentlemen, let me explain why Allen is not getting his diploma tonight at commencement. He cannot add or subtract.' They'd bring the house down with applause." It is guaranteed that all four populations will admire a student, yet refuse to give a diploma to the kid who can't do adding and subtracting. They put some other things on the list. "Knows the fundamentals of mathematics" won first and second places. That was only 97 percent of the residents. You see, they weren't quite as sure about that. For "writes correctly, grammar, capitalization, punctuation," 89 percent said no diploma. "Spells correctly, speaks correctly," was in the 80's. "Reads to get information" did not make the winner's circle. "Reads for pleasure" was even lower. But "reads to learn" was one of the

13. If you can't read instructional materials, no diploma. "Can follow directions; can organize ideas; knows American history; knows laws governing citizens behavior; can describe local, state and federal governments;" and finally, "knows how to get a job by making out an application and going through an interview" concludes the list.

I'm telling you that the majority of the students, the graduates, the teachers, and the citizens all agree: no diploma if you can't do each of these 13 separate things. We weren't too sure about it though; that's just a survey, so we interviewed people. We talked to the kids. "Do you mean it?" we said, and they said, "Well it's not fair for the teachers to send us on from grade to grade if we can't do the work. They're not doing us any favors. I know a kid in the class next to me who doesn't know what's going on. What good is it to have that kid passed on?" "It's embarrassing to be in a class when you can't keep up because you weren't prepared," said a kid. Another one said, "If I didn't get my diploma because I didn't pass a competency test, I'd understand it if they gave me plenty of warning. That's only fair." Then they said you ought to have a competency test to get out of elementary school and middle school. Don't wait till high school. That was the students talking. It could have been the citizens. They sounded exactly the same.

Well, just to verify it, we gave each of them $1,000 in play money and put 15 things in the education supermarket on the counter and said, "How much of this would you like to buy?" And they said, "$1,000 isn't enough." We said, "Sorry about that, would you like us to raise your taxes?" They said, "no." So we said, "Alright, you play the game with $1,000," and they spent their money.

There were no limits; they could buy as little or as much of what we had to sell as the learning agenda for the 1980's. There were 15 buckets, 15 items for sale. We dumped the money out of the buckets and counted. If they had spent money blindfolded, or carelessly, or without priorities, there would have been $71 in each bucket. We found nothing like that. Basic skill got $400 from the residents. Career education and occupational competency, $115. Nothing else got as much as $60. Lifelong learning--about $33 worth of that. How would you like us to have the kids take care of the physical environment?--$28 worth. How about self realization? Give that $36 worth. How about the fine arts? Make that $26. And so they proceeded to make very sharp distinctions in what they thought the school should accomplish.

When I was a school administrator, I never understood that. I had no priorities, and I was proud of it. I told all the coordinators in the central office that the band, the youth center, foreign languages, music, sports, science, health, kindergarten were all equal. "You are the most important," I told each one of them in the privacy of my office, just like they had taught me to in administration classes. I knew a fraction of the public didn't agree. We knew there were conservatives out there who thought that the whole alphabet consisted of the three "R's." We wrapped ourselves up with the PTA and we marched on, insulating ourselves from the general view. In later years, I found the same minority when I went other places. Superintendents would say, "Mitch, you wouldn't believe some of the people we've got in this community, but we have good schools despite them."

Today, I have begun to wonder, with the insulation wearing thin, whether that minority is not actually a majority. At least they do seem to have the votes. At the top of the learning agenda one is likely to find the fundamental things that have always been there. I do not think the public expects us to do it all. I think we like to ignore our profession by assuming all the duties. I think the idea of the "whole child" is an educator's idea, and I think the idea of a universal curriculum is an eductor's idea. I don't think the public ever thought that way. I don't think they've gone back to basics. I think they're standing there waiting for us to join them. The 1980's will be a decade in which priorities will have to be set.

Now, you asked me to look back to what we've learned. If we could have a panel here tonight, we might want on it Steve Bailey, John Carroll, Jane Sheal, Bob Glaser, John Goodlad, Ivan Illich, Ralph Tyler, and Bob Thorndike, but your budget couldn't quite handle that. So, I have a set of answers they wrote to questions Joe Califano and Mary Berry asked them a year ago. If you haven't read this report, you ought to, because the secretary said to this panel, "Look, apart from the changes in society that explain a decline in the people, is there anything going on in the schoolhouse that could explain the decline?" Now this is what these scholars said they had learned or observed during the 1970's. Four things have happened that have caused the declines, particularly in writing skills and SAT scores. First, more courses with less rigorous intellectual standards in high school. Second, confusion about the appropriate methods of instruction. The panel complained that we have taught teachers the slogans of the classroom but we have not accomplished it with training; consequently, we have produced teachers who are confused. They couldn't do the new things and didn't think they were supposed to do the ones that they were comfortable with and capable of doing. Third, says the panel, slackening the amount of time on task; 60 percent of the school day is assigned to instruction and maybe 60 percent of that, or less, actually goes into the kids' learning--maybe a third of the day. Fourth, dismantling opportunities for intensive study at the high school level.

The secretary said, "Do you think we should go back to basic skills? What about the trade-offs?" The panel said, "There are no trade-offs. If you don't learn the basic skills of reading, writing and arithmetic beginning with ages 5 to 8, then you won't learn anything else. You can't print basic skills for higher levels of intellectual work. When elementary teachers haven't done it, high school teachers are going to have to." So, we keep looking for high school materials in reading, writing and arithmetic. The panel further said standards are going up. We have a two-way problem here. It's not just that test scores are going down. What you need to learn, the panel says, is decidedly going up and so the gap is being widened in two directions at once.

"How about improving educational achievement, do you have any ideas?" the panel was asked. They said there were no panaceas, but time on task. Easy programs do not produce as much learning as do difficult ones. For beginning reading, a code emphasis seems more promising than a meaning emphasis. Early diagnosis in remediation works better than later. Reading to children things more difficult than they now understand helps linguistic development. A competent and energetic school administration is essential. Mastery learning a la Ben Bloom shows promise and, in some settings, peer instruction has had a good effect. "There are no easy substitutes," the panel said, "for a well-trained staff, principals who are helpful and supportive of staff, a disciplined atmosphere, improved pupil nutrition and health, and, ultimately, raising the standards of the peer."

What about the peer," said the secretary. "Do they need anything different?" The panel said, "Nothing different. There's no evidence to suggest that minorities need anything, either in content or method, different from anybody else. It might be the worse thing you could do, to give them a different diet."

What about the government trying to increase achievement test scores? "Not the scores," said the panel, "but certainly increasing educational achievement is a highly appropriate federal goal." "What do you think about minimum competency standards?" the secretary asked. And the panel, summarizing what it had learned in the 1970's said, "Statewide minimum competency standards for high school diplomas are basically unworkable, exceed the present measurement state of the art, and will create more social problems than they can conceivably solve. However, local competency testing at the lower grade levels to diagnose kids, pinpoint remediation needs, and build public pressure can be positive educational development." Who should be held accountable for learning, the school building and the people in it? Said the panel, "Maybe the school district. Certainly you could not reach improvement by trying to pick up a state by its boot straps." That's what they learned in the 1970's.

In closing, I'd say that American life is in a virtually continuous state of rapid change. Every decade since 1900, and I suppose as well as all of those beforehand, could be called a 10 year period of rapid social change. The 60's and 70's were no exceptions. The 80's and 90's promise more of the same--in population, in the role of women and minorities, in work, in economics, in family life, in leisure and, yes, in education.

TECHNOLOGY AND SCHOOL IMPROVEMENT: A CASE FOR LINKING THE TWO

Allan L. Peakes

I think a lot of the remarks and activities of the last couple of days have been very productive and informative. I know that I've learned a lot from listening to a number of you, and I hope that I can help in your efforts to plan for your own institutions, offices, and programs. The future has always been a hot topic in education. We're always planning for it, planning around it. Generally, we're planning to avoid it. And in a sense, what I have to say to you this morning is a little bit on the order of a good news, bad news situation. The bad news is that much of the short-term future is probably going to be as bad as

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anyone has yet forecast. The good news is that, if we start working now, we can get out from under that a lot sooner and come out with a lot fewer negative consequences than one might otherwise anticipate if we don't start moving. So if we continue some of the activities that you folks have said you're doing and said you want to do, I think we can avoid some of the problems that I'm about to delineate.

We're coming to the end of a decade. Newsweek has already jumped the gun with its decadal summing up. We have only another 20 years and one month before we come to the end of not only a century but a millennium. At the end of the last millennium, people were totally convinced the world was going to end. Many educators feel that way annually at budget time. But, in a sense, where we are today in education is unprecedented. As Dr. Williams said yesterday, never have educators been asked to do so much for so many. Society is asking us to save energy, teach about drugs, supplement the family, raise reading levels, socialize kids, develop technological literacy, live in harmony with our environment, promote life-long learning, modify undesireable behavior, avoid war, prepare students for an increasingly diverse working world, promote social mobility, and provide equal access to all of the above to an increasingly diverse and numerically large group of people at no additional cost to the public or the consumer. Well, as Dr. Williams said, that's quite inclusionary and it's also somewhat different from what we've been asked to do in the past. These tasks, by the way, are to be accomplished under the auspices of institutions that are structured and scheduled according to the calendars of an agrarian society. We now have fewer than one out of 10 Americans associated with agrarian activities, but that's still the calendar that most of our institutions run on. These institutions are staffed by personnel trained under a system that is the outgrowth of a medieval guild, which is also interesting, considering that we haven't had guilds for about a half of that last millennium I mentioned earlier. All this is to be done in the context of a society that, in the last 100 years, has increased its control of disease by 100 times, increased its speed of travel by 500 times, increased its energy resources a thousand fold, upped its speed of handling data by 100,000 times, increased the power of its weaponry by one million times, and increased its speed of sending communications by 10 million times. Things have changed since we developed our models for American education.

Before we move toward bridging the gap between theory and practice, I think it might be useful to take a good look at where we are in education. The public doesn't view us in the most positive way. According to George Gallup, the public perceives that schools are getting worse each year, and are poorer than they were when the respondents to the Gallup poll attended school. The consumers, our students, are leaving us in record numbers. In some instances, the drop-out rate is as high as 50 percent. Nationally the drop-out rate is approaching one out of four of all students that start elementary school--one out of four. That's a pretty high rate.

Dr. Williams mentioned some of the reasons, for those of you who missed his talk. In general, they were: a sense by parents that perhaps they could do some of the same things that schools do, only more of them, and then do a better job; reformers are offering piecemeal criticisms of certain sections of the system and, therefore, making all of us look bad; and the media is viewing schools in a way unlike ever before. However, I think that the media are playing a different role in American education than ever before. Prior to the election of John Kennedy as president, the media in the U.S. were basically a reactionary institution. Now this is not in the political sense, though some say media could be used in that sense. But rather, the media were publishing, broadcasting and transmitting the sorts of things that institutions told them to. In other words, you wrote a press release and it was very apt to get printed verbatum. Our reporters are developing critical faculties that people in education sometimes wish they didn't have and, as I'll elaborate later, our administrative and teacher-training programs do not at all prepare people for dealing with reporters, appearing in public or on television. People don't have the vaguest idea what one off-hand remark can do to a reporter, until people see that their budget might be cut 50 percent because of what somebody said to somebody else in a hallway when they thought it was in confidence. So, it's not that I think the media are singling us out; I think all institutions are undergoing this phenomenon. In a sense, I think it's good for us--given the data that I cited just a few minutes ago in terms of drop-out rates, etc.--to have omnipresent public accountability. That's not to say the media always get the story right, but that's their problem. It's also ours as I'll elaborate later.

Now when you couple some of the drop-out data and public opinion data with other research findings, you will find that many of the institutions that used to help us in public education are also falling apart, or at least eroding. We can now forecast, using census bureau data, that at least one-half of all our students will live in a single-parent household for some period of time by 18 years of age, the traditional high school graduation age--at least one-half--now, that's unusual. We haven't had that before. Although there is no way to ascertain the quality of these familiar relationships, some of them may indeed be a significant improvement over the families that just kind of stay together because they had to. It is clear that the number of opportunities available for children to interact with adults is apt to be significantly reduced. There's not much question about that.

The neighborhood is another area in which kids used to learn, and people would compare report cards and warning cards, and after-school activities, etc. It is also rapidly declining as an entity in American society. One out of four Americans changes his/her address every single year--one of four. The significance of these figures has not been fully documented. Some have speculated that, as with the decline of the family, the number of chances children have to interact with adults will decline. The multi-age interaction that children will experience will decline. The child's sense of place will decline. Creation of one's own environment and play areas also will decline, and the child's general sense of empowerment is apt to be impaired.

The last salient tidbit that I'm going to drop on you in this area is that our funding sources, from all indications, seem to have put a lock on the percentages, the percent of the total resource pie available to educational institutions. By this I mean that education and educational institutions have received an ever-increasing amount of the GNP. The amount of money, real money, out of the GNP that educational institutions can expect to receive is leveling off and, in fact, in some areas is going down. Currently, inflation costs some educational institutions as much as 14 percent per year. This is contrasted with an average growth of revenues of only seven percent per year. This represents a seven percent decrease in real dollars for many of our LEAs, schools, and other institutions. The loss has been happening during a period of moderate economic growth. Do we really want to speculate about what's likely to happen during a recession, a depression, or a period of stagflation? How likely is the occurrence of these events over the next 10 years? Very likely, in some form. Economic forecasts for the next decade indicate that stagflation, which is no growth for the company with moderate rates of inflation, is likely to alternate with low-growth, massive inflation periods, as is presently the case, and periods of economic recession. Depending on the handling of the present global resource situation, even worldwide depression is not an impossibility. It is certainly conceivable, and some people present in the world future society speculate that that's very likely to be the case. I don't happen to agree that it's very likely to be the case, but I think it certainly has a chance.

About the only economic future not mentioned in forecasts is a high growth rate, low rate of inflation boom time, as was present in the mid 1960's. That's the only one that economic forecasters say is very, very unlikely to occur.

Coupled with this economic erosion, our society's likely to face resource costs growing at an exponential rate. Energy, although known to us all as the best example of this, is certainly not alone. Food, water, paper, transportation, and the delivery of goods are all additional examples of necessities of life that we as a society have to anticipate are going to cost more. These will all be subject to exceedlingly fluctuating levels of price and profits and net losses to institutions of education.

The political arena thus far has offered little in the way of constructive activity in response to these situations and problems. The responses to these increased costs of life's essentials have been inconsistent, wildly changing, and extremely short-sighted. No group of people that you can call society ever responds to warnings, no matter how they are received, unless options for constructive change are presented with them. This is sort of like the Titanic effect--the band plays on even while the ship's going down. Hence, it's no wonder the majority of our citizens feel as if the energy shortage is some sort of fabrication. The government's moral equivalent of war message somehow gets undermined, when the suggested alternative for action is making a few already rich corporations richer and having the rest of us just use less energy. Somehow, someway, you just better conserve, okay? While you're conserving, you also have to pay more. It's no wonder we feel ripped off; we as a society feel ripped off. We feel someone's lying to us and that somewhere out there there's some conspiracy, and everyone's trying to pass the blame around. The corporations take out full-page ads saying our profit levels are, in fact, normal over a ten-year period. The President tries to blame the Arabs. The Arabs say the heck with you, we'll raise our prices if you keep blaming us because your profit margins are up; and we all keep trying to pass the blame around. In fact, the public doesn't believe any of these facts. We're just upset and mad.

It's little wonder that, according to last Monday's poll released in the New York Times, fewer than one-third of all Americans feel that their personal future will be better than the present. Their personal future was defined as economic, professional development, family happiness--the three most common areas mentioned. Only about one-third of all Americans feel the future's going to be better than the present, for them personally. Only one-eighth feel the nation's future will be better than the present. Only one-eighth, 12 percent or so, feel that the future of the United States of America is going to be better than right now. That's not exactly a resounding vote of confidence.

Both figures are dramatic declines from similar research conducted only three years ago. And three years ago, for those of you who may have forgotten, we were still coming out of the whole Watergate thing, and our disengagement with Vietnam was less than two years in the past. The previous energy crisis, energy crisis no. 1 (this is beginning to sound like a television mini-series), was only three years in the past. Yet somehow only three years ago, Americans still felt more optimistic about the future than they do now.

Well, what implications does this have on where we're going? These events, however likely we think their occurrence is, have already had a profound effect on the public. Over time, education's share of our total resources has gradually grown and, as I mentioned earlier, election results of the last two years indicate that is over. Voters appear to be telling us that, regardless of how well or poorly we are doing, what we see is what we get and we better not count on them for a higher percentage of their income. The labor intensive nature of our institutions has clearly been the driving force behind our continuously increasing request for more of this pie. Over time, capital intensive industries cost less than labor intensive ones, primarily because salaries rise more rapidly than capital costs. Machines cost a lot to develop and produce; however, over time, machine maintenance is low. Maintenance of personnel tends to be very high; I'm sure all of you administrators can relate to that.

Now that our goose is in the oven cooking, how are we going to get it out of there? I know of no other answer than to move from the Victorian Age to the Space Age. To make such a move, at least in part, we need to utilize technology. There are certain sectors of our institutions in which people are no longer economically competitive with machines. For instance, computer-assisted instruction is decreasing in cost at a rate of five percent per year. Computer-assisted instruction is increasing in productivity at a rate of 10 percent per year. That's a 10 percent increase in productivity per annum.

All indications from the computer industry are that these rates are very likely to continue and possibly increase over the next decade. Therefore, we can forecast with a little more than reasonable hope of being correct that, by 1990, these machines will be three times as productive at one-half of today's cost. Three times as productive at one-half the cost. No training model I've ever heard of offers a comparable track record. We must shift our resources from the human sector to a technological development and training sector. We've reached the limits of our public's ability to pay, and somebody has to make some hard choices on how education is going to be more cost efficient. We haven't been, and people are telling us that we must. We've been losing good people to other sectors of the society because we can't pay them enough money. There's less incentive for folks to go into education and stay in education, because other sectors pay more. This loss, in turn, further undermines the public's confidence in our institutions.

Changing education won't be easy; but it's a lot more viable strategy, I feel, than changing our nation's economy, changing the world's resource situation, changing people's personal spending priorities, or changing the nation's political system. If we fail to change education, what's it going to look like? We face the prospect of training teachers to receive the same relatively low salary, to teach double the number of students in declining physical plants with half the number of books, administrators, and support personnel than they currently have. Anyone want to try to deal with that situation? Given the rate of inflation that's going to continue at somewhere between 10 and 18 percent per year, we're not apt to get more than a seven percent increase in real costs per year. In real dollars, we're going to lose seven percent per year, which means that within 10 years, we'll face the situation I just outlined in most of our classrooms.

What are we going to do about it? I feel like Karl Malden, "What will you do? What will you do?" Well, we can continue to do what most institutions have done, which is cut a little bit everywhere and hope to ride out the storm. However, after you do that, for a year or two, you start to erode the quality of everything else. Certainly by 1990, we in education will be faced with a situation where people will say we're not doing much of anything well, because we've been cutting and cutting and cutting and cutting. And all these things outlined at the beginning of my talk that people have been asking us to do--we'll certainly not be able to do all of them well. There's a good chance we won't be able to do any of them well.

We could shift responsibiliities. That's another tactic. We could say, "Well, we don't want to deal with drugs. We don't want to deal with sex education. We agree that's the prerogative of the family. Let's get it out of the schools altogether." Certain people and certain institutions may be able to attain some of that. However, in general, I would posit that the public is not very likely to be very happy with our reneging on some of our responsibilities, some of the responsibilities that we have agreed to assume and receive money to assume.

Then there's a third alternative that I call the 'Penn Central Solution': just put our heads in the sand and do nothing. And you saw how well it worked for Penn Central. We could go into national receivership. Some schools are already doing that. Yesterday it was mentioned that the schools in the capital of the state where I now work, Trenton, New Jersey, have been placed in receivership. In more and more instances, that's true around the country. I don't know about you, but I don't want to speculate about the quality of education run by the court system any more than I care to speculate about the quality of medicine run by the court system.

There is a fourth road and that's the road I suggest we move on. To a certain extent, we need to start thinking about the idea of moving from a system of school learning, which is what we've had in America. Charlie Williams said yesterday this is unique. We've had a schooling system. We now need to think about an educational system to do all these things that I talked about earlier. And things that humans do well they should continue to do. The things that schools do well, they should continue to do. But the things that machines do well--it is idiotic, irresponsible, and unlikely to continue to do these, if we don't utilize some of the technology that the private sector has already developed.

Our profession needs to take an assertive stance now. Teachers, administrators, professors, and the like need to find out what the possibilities are. Most of us don't even know. The private sector has already invested millions in research, development and production of micro-computers, calculators, video discs, cable television, open broadcast radio, and educational use of satellites. They've invested tens of millions of dollars in these things, and we hardly use them at all. Our training and staff development programs need to relect what is already known in these fields. I know of no training program in the nation right now that works with teachers or administrators that utilizes what we already know about technology--not one. Virtually all teacher and administrator training programs now existent are structured as if the overhead projector and the chalkboard were the most up-to-date technological innovations known to the human race. Now it's true the overhead projector was only invented 35 years ago during World War II but, come on people, we've really come a long way in technology. This is the technological era, and our training programs act as if we're still training people to go out and teach in a one-room schoolhouse.

Clearly, that doesn't reflect reality. We need to develop new competencies in our profession. We also need to teach administrators, in particular, how to use the media to circumvent and transcend some of the problem situations that Charlie Williams outlined yesterday in his talk. That's how other public officials do it. That's how other institutions do it. We don't have a Reverend IKE for education. We don't have a Frank Berman for education. We don't have a Lee Iacocoa in education. We don't have press conferences, except to bring people bad news. Then the superintendent comes out usually with a public information officer, because they figure if they're going to kill the messenger, the messenger will be someone else, and you say, "Well, gosh, we hate to tell you this, but we're going to close your neighborhood schools. Sorry about that." We drop bombs on the public. It's no wonder the public doesn't trust us. There are ways of utilizing the media when you know you have to close a school; closing a school is something you can forecast years in advance. There are ways of educating the public to get used to the fact that, if you want one school to stay open, another school is either going to have to be closed or utilized in another way. But if you come in in August and say, "Your kid's not going to his neighborhood school any more," or "Suzie's going to be bussed across town because the enrollment figures indicate that we can't, in a cost efficient way, keep her school open any more," parents will just kill you. Our public will kill us all the way from the federal level down. You know, the public asks questions like, "Why in God's name didn't you tell us some of this stuff before?" So we as researchers and administrators don't do a very good job of communicating to the public things that we already know. I think we need to utilize training programs to enable us to better communicate with the people that we all say we want to communicate with. Now this is pretty non-controversial. Nobody says you shouldn't tell the public things; nobody says you shouldn't tell parents things. But yet, there's no training program for administrators, that I know of, that teaches them how to use media, that teaches them how to deal with the press, that teaches them how to inform parents in the community about long-term developments in the schools.

How are we going to go about doing this? Won't teachers feel threatened by this? Isn't it hard to understand? No. Doctors are trained, using a combination of courses and hands-on experiences. You can train people in technology the same way. You train adults in technology the same way you train kids. You give them some theory, some course work, and a whole lot of practice. They'll even have fun with the stuff. Some of these technologies are actually fun. The big growth area now is in all these computer games. Plus, you've all seen the nice lady on television who asks you the very poignant question, "Is $500 too much to spend on your child's education?" "Well, gosh, of course not, lady. I'll gladly give it to you." That's the response they're trying to illicit anyway. And once again, with computers we're faced with the same situation we had in so many other areas in education--it becomes an issue of class and not equity for those who can afford that $500 (or $1200 if you want one in color and multi-dimension.1 Those are the real sharp ones. They'll be out for next year's holiday rush). These kids will get to be computer literates. The rest of the kids will be sold Basic Reading Series, and their parents will say, "This is the best our educational system has to offer." And we'll tell them that, and we know it's not true.

To offer teachers and administrators the same courses a researcher takes to be technologically literate is a wrong strategy, just as it would be a dumb idea to require that, in order to be a dentist, one first had to be a dental research specialist. Many of the technologies I mentioned earlier are so simple and so inexpensive that, in more and more instances, the students will already have had extensive out-of-class experience in their use.

This is a good group to begin with because everybody here, or at least most of the people I've heard, has talked about the need for working with teachers that are already in schools. Operating in-service training programs, or altering in-service training programs, are the places to start. Pre-service programs are withering on the vine. To talk about what new teachers need as competencies just won't do because, friends, in most of the country there isn't much of a market for new teachers. Although, as we heard last night, you might be able to squeeze a few new teachers into the adult education market.

These training programs could have additional utility in that educators can lobby for and help create technologies that are most appropriate for them. If we only rely on and allow the private sector to do the public sector's business, then these technologies will also go the way of television. When television first came out everybody said, "Hey, this is going to be a wonderful educational tool. People will learn so much from it." And I would say that, in fact, what we learned the most about is advertising, which is predictable because those are the folks that pay the freight. However, the technologies I delineated earlier--video discs, micro-computers, small calculators, open broadcast radio--are all things that, on the grand scale, are still in their infancy. We can do two things: We can lobby and work with the private sector in developing materials that are appropriate for us, and we can develop technological literacy among our own professionals.

To accomplish the first one, we need to exhibit potential marketability of educational materials to the manufacturers. For instance, today, right now, it's possible in most towns to purchase two video discs for $50--$25 each. They look like a record; they're either metal or plastic. You can get them either way. The video disc player costs $750. You then hook this player up to a television set. You get a player that looks like a big version of this little cassette recorder here. You get a TV, and most schools have televisions in them, and then you get these things that look like records that go on the video disc player, and just two of these things can have every page of every book in the average elementary school library in the U. S. Your average elementary school library has 10,000 volumes. You can put 10,000 volumes on two video discs. This is one way to save your libraries and make them even more useful. I'm not suggesting that you would want to have all your books on video discs. You might want to get rid of some of them. But this is just one example of how you can utilize this technology. And I don't need to tell you that 10,000 books cost a good deal more than $825.

At the moment, most video discs have mass market entertainment on them. However, if we work at it, if we lobby, we can get people to produce some of the things we want. There are millions of students and thousands of schools. If we develop some sort of information-sharing capacity on the potential marketability of these products, we can get them by this time next year. They're simple to put together.

The other area that we could move into is technological literacy. In the history of the U. S., technological products are produced almost anonymously. Now, who really knows who produces television shows? Who really knows who produces movies? Who really knows who puts together the Allyn and Bacon reading series. All you know is that the stuff is there and it's coming to you. Well, whenever our profession has its problems, we seem to be blaming some corporation, network, or testing service on one hand, and pleading for a new show, book series, or test, on the other. Some of the new localized, small technologies such as computers, open broadcast radio, and video discs offer the opportunity in the next 10 years for practitioners to create their own software. You can create your own Allyn and Bacon series, once you have the materials to do it, and a lot of teachers know how to do it. That doesn't mean you create your own book series but, with video discs and computers, you don't need all these visuals, etc.

Currently, over 90 percent of all scientists who've ever lived are still alive. Think about that for a minute. Over 90 percent of all the scientists who've ever lived are still alive today. Yet, our institutions haven't changed too much. I would say that technological literacy is really a basic skill. We've talked a lot about what our students ought to have as basic skills. I'm suggesting to you that this should be a basic skill for all of us in our profession, whether your interest is in staff development, curriculum development, teacher training, teacher improvement, administrative training, or management and budget. The use of technology will enable you to address what once before was called the central agenda of our time--doing more for less.

That's the end of my formal remarks. I'm more than willing to entertain questions. I can't say I'll answer them, but I'll still be here with more verbiage.

Question: Simple question. What is open broadcast?

Answer: Open broadcast radio is somewhat analogous to cable television. It's been used extensively in developing countries to combat the literacy and illiteracy crisis that most of them face. What you have are educational programs in the native tongue of a particular region. In many societies, that's a real problem because there are anywhere from one to several dozen languages. So you have a localized educational broadcast over a $3.00 radio, which the government gives out to people. They repeat programs throughout the day; and then, about once a week, a government facilitator will come around, and people will literally sit under a tree and talk about some of the things they've heard over the radio, some of the things they've learned. Some of the material is repetitive. Some of it is geared towards what we in America would call basic skills, but some of it is also more general interest sorts of material than is currently present in this country. This is one way, for instance that Cuba got a lower rate of illiteracy over about a 15-year period It's one way to get over the idea of having to build new schools everywhere. And, historically, that's what we have done when we've gone into developing nations; we've told them, "All you've got to do is just be like us and you'll have a great educational system." They say, "Well, that's neat, but we can't afford it." Open broadcast radio is one way around that.

Question: In the 20's, during the early days of radio, it was seen as a great prospect as an educational tool. I guess it was the fault of educators that it was pre-empted by commerical uses. A similar thing happened with television. Do you really think this is going to change?

Answer: If we do the same thing now that we did then, I would say there is no hope at all of it changing. If we say television is television, radio is radio, and schooling is schooling and they will never meet, then they never will meet. If we lobby with manufacturers and start to develop some of our own competencies and some of our own capacities to create software materials, then it will change. But if we just throw up our hands and say, "Oh my God, that's a machine. I can't deal with that. All I can deal with is an overhead projector. I've got to call in a technician to run the 16 mm projector," then, no, that won't change. I'd say one way to change all that is through networking folks like you and through training programs.

Question: It was the same with the printed page. The encyclopedia basically was going to be the saviour of everybody who was illiterate. What's to keep the new technology from going the same way?

Answer: Centralization was the hallmark of the creation of the encyclopedia. If all your material is only produced in one place, like the encyclopedia, then it will probably have about as much utility as the encyclopedia. In other words, it will be a place to look things up, you know, as our budget managers currently use a computer; but beyond that you're not going to learn too much from it unless you're a kind of a weird kid or a weird teacher who just likes to go sorting through the stuff. But there aren't too many of these folks around. They've got better things to do.

If we create things locally, I'd say they have a much better change of being used.

Question: Are the futurists using computers to check out specific variables?

Answer: Some variables, yes.

Question: For example, institutional variables?

Answer: Some institutional variables. National institutional variables are often open to either dispute or, at any rate, multiple interpretation. But, sure, futurists have to use computers to analyze data just as anybody else does.

Question: Where's the evidence of that?

Answer: In approximately three or four dozen Future's research groups around the country and a multiplicity of graduate, undergraduate, and public school programs. Most of them use a computer to analyze variables in a variety of different ways. How extensive that is really depends on which variable, which computer, and which group you're talking about. But yes, they are doing it. Whether they'll be able to avoid incorrect forecasts is another question altogether. I would say the likelihood of developing correct forecasts correlates directly with the localization of the forecasts, because you can run all the computer programs you want. One of my favorite stories is about a research institute which I will not name. It did a study for the Portuguese government not terribly long ago on the future of colonialism in Angola, and they came out with a pile of data. It was fantastic. They said the future is going to be just like the present, only more and better. In essence, that's what these many thousands of pages of material that they generated said. All you've got to do is what you're doing now, only a little more of it, and you can continue to run Angola. The ink was barely dry on the report when all the Portuguese were back in Portugal. The problem was the research group only asked the Portuguese; they didn't ask the Angolians.

Question: When you're talking about computer technology and the use of computer technology for education, do you see this moving in the direction, say, of shared time on large computers or will the direction be in the use of mini-computers or micro-computers and video recorders?

Answer: I would say both. In many cases, you already have a large computer center that shares time with a multiplicity of districts or institutions. I think the real major impact, the way to get us through the resource crunch and the cost crunch that I outlined earlier, however, is with the micros. The small computers that kids and techers can program, and that can be hooked up with video discs, that is where your institutional effectiveness is likely to have drastic savings involved in it. I think the major potential for the use of computers lies there. Once your big computer gets the Library of Congress on it, and once you've got everything imaginable programmed into it, it's going to be a case of "seek and you shall find." You know, you ask the big computer what are all the books that a particular author wrote and the response will come out as soon as you ask the computer. In less than 10 years, kids will be able to do math by computers and satellites with kids on other continents. I don't know if they'll want to; I don't know if that's appropriate, but it's a lot better way to learn social studies and foreign languages. And it's going to cost very little to do because the satellites are already up there.

Question: Is it possible to broadcast what we know about computers over television?

Answer: Sure, I think that's part of the training program and the awareness for educators in the field of technology that I mentioned earlier. Right now we act as if technology is just Madison Avenue. If we don't develop competencies in this, if we don't develop an awareness in these areas, then we default on that. In fact, commercials, Star Wars, Charlie's Angels, the Love Boat, are about what we're going to get. And the reason is because we didn't input in the early stages. You know, when television was coming into its own in the early 50's, we ran away from it. And all we've done since is blame television for everything we could--declining test scores, bad discipline, assault on teachers, high absentee rates. We blame television for everything. But heavens, we'll never work with them. We don't know how to use it. We don't know how to input into television. We don't know any of that stuff. There's been a little work done in the field of micro-teaching, with which some of you are familiar. I think we could use some micro-teaching for administrators, too.

CHANGING ENERGY AND SOCIOEDUCATIONAL TECHNOLOGIES FOR THE 1980's

Arthur M. Harkins

Let me begin with some assumptions.

So far as I can judge, the most obvious impacts on eduation in the 1980's are going to come from energy and technology. These impacts will probably have "sympathetic" outcomes in curriculum, the patterning of the school year, education job types and distributions, and public assessments of education. I further assume that most of these sympathetic outcomes will result in improvements in available educational services rather than further erosions in them.

Dr. Harkins is associate professor and director of Futures Graduate Concentration at the University of Minnesota. He also is editor of the Journal of Cultural and Education Futures. In his remarks, Dr. Harkins proposes using available technology to improve education and the quality of life.

Before going any further, let's define technology. While most people believe that technology means things--such as computers, pocket calculators, telephones, and microwave ovens--what technology really involves is the rules, or ways of thinking, that produce the things. You can't hold a piece of technology in your hand; you can hold the results of a specific technological development.

America's energy problems exist in part because politicians and planners won't recognize that the energy technology standards evidenced by the automobile and by many forms of industry and housing are, to put it bluntly, primitive.

Take a moment to imagine this scenario:

Grunt, a caveman, eats a lot of mastodon. He's tired of hauling the bones one by one to the garbage dump, so he rigs up a sort of wheelbarrow out of a few spare bones and some dried tendons and chops a couple of wheels out of stone. The wheels turn out square, but he uses them anyway. Instead of trying to improve on them with the tools he already has, he says to himself, "Well, it's the best I can do; I'll have to learn to live with it."

What we're doing is telling ourselves that we have to learn to learn with our gas-gulping automobiles, our energy-inefficient homes, our polluting and wasteful industries. We've convinved ourselves that the technologies we already have are the best we can do. When I say that the technology standards which result in our lifestyle are primitive, I'm really saying that it's time to change the rules and the way of thinking that go into making our lifestyle what it is. Our official standards of excellence in energy technologies are generally so abysmal that we blind ourselves to the great successes we have already had in energy-related areas, and to the high promise some of these hold for relieving our energy problems.

The biosphere--the animal and plant life on the earth--is altogether one great technological system acting to influence the future of the planet while it, in turn, is acted upon by the effects of its own existence and by inanimate forces.

All human energy decisions indicate how primitive or sophisticated our thinking about technology and technological standards actually is. Many otherwise informed politicians and planners seem unwilling or unable to confront, comprehend and utilize in a practical way the on-the-shelf related technologies that could make the energy crisis manageable. In other words, there are better ways of dealing with our energy problems that moaning, groaning and threatening to withhold wheat from the Arabs.

Now, you know that my assumptions are based on reality as I perceive it, and that future good things for the people of the nation are tied not only to my perception of reality, but to yours as well. I'll try to show you a little more about my view of future education with the help of a scenario, or word picture, which ties together energy, technology, and socioeducational futures. (Watch carefully for changed roles, for teachers and for others.)

> The year: 1984. The 20,000-channel fiber optics system which Chicago approved after years of debate and delay is now fully operational. This winter, office travel has

been reduced to two days per week for most white-collar workers and executives, who work at home during the other three days. Schools operate around the clock with outreach programs, and teachers lecture and assist students from their homes. Self-help programs have made it possible for most families to snugly insulate their own homes with state-of-the-art materials and techniques. Freeways are nearly empty save for buses and vans. Subsidies are a problem, but only for the very poor; the working and middle classes are in good shape. The fiber optics system makes much of this possible, primarily through the availability of two-way video, voice, and data communications between virtually any two points in the city. Travel needs are reduced, making work and education both spaceand time-free. Energy is saved while jobs are recycled away from the primitive automobile technologies into communications, mass transit, and home refurbishment and beautification technologies. Upgrading the quality of individual and family life is a source of still more jobs.

My point is that thinking connectively about energy-related technologies can enable us to develop different conceptions and uses of the hardware we already have or are well on our way toward having. The bottom line is the improvement of the quality of community life.

What can be done? A number of things--none of which is particularly difficult:

First, educational planners must realize that the biosphere is an experiment. We are all part of that experiment, and the only part that focuses intelligence and courage on demanding improvements in our condition.

Second, educational planners must start thinking in terms of technology and hardware as being related but not the same--technology produces hardware. By laying the blame on technology, they're actually pointing the finger at their own outdated thinking processes and rules.

Third, educational planners must start thinking in terms of setting new standards for technology and, by extension, for hardware; quality of life concerns are absolutely crucial here.

Fourth, they must brainstorm about connective options in existing and future technologies (the fiber optics system, for example, is not operational on any large-scale basis as yet).

And fifth, they must realize these things practially by re-educating themselves. Otherwise, matters will simply become too complex and unmanageable for them to handle. They must develop the intellectual and emotional technologies necessary to effect positive change--and they must take the responsibility for doing so.

Perhaps I should mention at this point that I'm a futurist, and that futurists are seldom the most popular people on the block largely because they're always sticking their noses into other people's business. We berate the educational system and rail at various other institutions which to us seem shortsighted if not altogether blind. We've been accused of any number of crimes, not the least of which involves a supposed inability to see reality for what it is. Be that as it may. In my eyes, the futurist's job carried with it the right to interfere, to criticize, to nag. If we're going to have any future at all, we must start considering our immediate actions--the ones we're taking now, today, at this moment--in terms of their far-reaching consequences.

Which leads me back to the subject at hand. Eduation _should be_ a futures-oriented profession. I say _should be_ rather than _is_ for a number of reasons. For instance, we like to think that we design curricula to last. But do we? Or do we merely design curricula that suit our current needs, or, even worse, what we've been taught to believe are our current needs? Our energy-gobbling citages of glass and steel may be lovely to look at and delightful to work and live in, but they're prehistoric as far as today's--and tomorrow's--needs are concerned. The traditional educational concepts we've all grown up with and have been instructed to revere are not only impractical in this day and age, they're downright dangerous.

Design technologies are a part of all professions. Some of the most esoteric components of system theory have embedded within them a number of useful pointers for education. One of the basic notions of systems thinking is that _everything is connected to everything else_. Everything is affected by--and affects--everything else. You can't, for example, design a building without thinking about its neighbors. Because of the complex interconnections that exist within our society, living systems can never get a "free lunch." This is due to the fact that when we use some resources--such as space, light, energy, and the like--we not only deplete the donor system but also influence the receiving system. How we influence it, whether positively or negatively, is a matter for our immediate attention.

Consider, for example, what happens in a lagoon, a meadow, or even our entire planetary biosphere. Recyling of various sorts is going on all the time in these natural ecologies. Because we live on this planet, we must be part of this recycling effort. We can't keep on taking and taking without giving something back.

Design technologies aren't a function of human inventiveness alone; they're abundantly apparent in the behavior of all species. Biosystems go on surviving singly and in ecologies because of their overall symbiotic qualities. The idea that there's no free lunch applies to everything that eats and breathes, grows and reproduces itself and dies on this earth. Any species which gorges itself virtually guarantees that it will starve at some later date, even when the resources being consumed are renewable. When we make pigs of ourselves by using our natural resources with no regard to putting at least some of them back, we're doing virtually the same thing. Oil and coal are finite resources. So are trees and fresh water. So, too, is the very air we breathe.

The heterogeneity of species within ecosystems involves the transfer of resources within the total system, resulting in what is called "dynamic equilibrium," or ecosystem survival. But this survival is the result of much suffering and dying. The big, wide, wonderful world we live in is in reality a cold, cruel one. It has been the task of many human institutions, particularly the religious and the familial, to ease the shock of nature's savage ways. As far as we know, humans are the only living creatures which bother to design cultural or symbolic cushions against the brutal realities of biospheric dynamics. Human systems appear to be unique on this earth in this use of their culture, which allows them to codify and transfer intergenerationally any number of nongenetic design principles.

With the advent of neo-Darwinism and the rise of modern genetic, cybernetic, astrophysical, and informational theories, humans have been able to develop languages which are useful to understanding both genetic and cultural design principles. The central role of symbiosis among heterogeneous systems in the biosphere has led to the modern ecology movement and is associated with emerging "holistic" philosophies of life, including some varieties of Marxism and even Euro-American capitalism. It is necessary--no, it is critical--for educators to understand the essentially brutal nature of conditions which are associated with human attempts to survive. It is critical for educators to be trained to take into account the "non-educational" variables in their work. If in fact there is no free lunch, then the educator simply cannot sit down at the planning table and come up with a design without first considering who the donors and the recipients will be. For example, is it really feasible to undertake a new school building development in an energy-poor situation? Who will gain, and who will lose? Should education curricula be raising questions like these? Should professional societies be addressing them? Or, should these matters be left to philosophers, social scientists, and politicians? You probably already know the answers to these questions. But what are you doing about them?

The systems approach contains the notion of "holographic" information storage in human cultures. This means that every sector of culture contains all of the essential characteristics of all other sectors. Thus, it becomes hard to separate politics from religion, business from private life, and education from anthropology. Cultures are systems which contain a number of smaller units, such as economic, religious, familial, and other institutions, but these units are really only abstractions used for analytical convenience. They are not nearly so separate in real life. In order for education to become connective, its practitioners must learn to realize this. And this realization must affect not only practice but curricula as well. Seeing connectiveness for what it is is not merely an intellectual act; it is also the basis for renewed moral and ethical responsibility.

The technological principles I am referring to here--dynamic equilibrium, symbiosis, no free lunch, and holographic culture--are at the metalevel; they are equivalent to thermodynamic or classical physics "laws." They are not the same as techniques, which is about all that most education students receive during their training. The metalevel principles are not directly concerned with technique, but rather with conceptualizing the basic invariant components of world view. There are many other such components embedded in the scope of systems theory which could be useful to educators, not only in facilitating the mechanics of their craft but also in establishing richer communication both within and without the profession.

For example, let's consider the concepts of irreproducibility and change. Let's begin by seeing ourselves as acting within the realm of system architectonics, or the metadesign level, within which we can analyze systems of educational tradition, curriculum, and school environment design practices.

Biological systems exhibit such complexity as to overwhelm our ability to understand perfectly even a single-celled organism. Darwin's notion of "natural selection" allowed us to contemplate nature's tendency to select heterogeneous genes for survival under the stresses of environmental change. Heisenberg's notion of randomness in complex physical systems permitted us to understand more fully the incredible complexity of the biosphere and the tendency of complex systems to "oscillate" around "norms" or "baselines" that were almost never empirically observed. Both Darwin and Heisenberg--along with countless others--in essence rubbed our noses in change: its ubiquity, its constancy, its unversality, its not infrequent horridness. We began to realize that change is indeed the only constant in the universe, that "the more things change, the more they do not remain the same." We began to shift away from an idea central to industrial society; namely, the notion of homogeneous products produced by error-free, purposeful human behavior. Many of these products were, of course, cultural: curricula, pedagogical practices, professional styles, and so on..

Our failures (and partial successes) in designing improvements into the human condition have traditionally been associated with our attempt to fight change. We build one low-income high-rise after another on the same plan with no regard to local culture and changing lifestyles and expectations. Following in the footsteps of obsolete 19th Century science, we seek to achieve reproductibility of favorable results through "rationality." Our rationality lies in the grip of a world view that has little to do with how complex human biosocial systems function in similar, and different environments. And, of course, we rarely look imaginatively into the future. As a result, the changes associated with energy resource depletion have caught us completely by surprise. In short, we keep trying to make the future act like th present; the future has never done that, and never will. According to the notion of irreproducibility in complex system, it is futile to try to make it do so. Randomness and irreproducibility lead to a focus on change, not stasis; they lead to a sense of evolution, not efficiency based on rigid, mechanical, purposeful behavior. Non-symbiotic education exists; it is also non-holographic (read rigorously "disciplinary"), thereby inefficent and potentially dangerous--both to itself and to the future of the human condition.

Connective education based on a different world view is not the answer to all of our problems; rather, it is simply an approach more in tune with the complex conditions of the human-biosphere experiment. The systems approach is one of many that can be used to help make education more closely connected with reality, and thereby more efficient. Systems architectonics, the science of metadesign, is one route that we might consider taking to bring about a more responsible education. If we're going to start thinking about redesigning ourselves--our training institutions, our outdated concepts, our thought processes. Aesthetics must become secondary to utility and common sense. It's time for educators to bring their heads out of the clouds--polluted as they are--and start thinking about taking a systems approach. The only truly ideal curriculum is one that ensures and increases the probability of human survival.

So, what do we do when we get to the point where the interactive nature of the ethnotronic system makes it much more advanced in terms of learning or teaching to use instruments rather than people? What do we do with 3 million teachers? What do we do with 750,000 postal clerks who could be put out of work in five years? With the simple application of on-the-shelf capabilities, we could deliver facsimile mail and electronic mail directly to every home by three satellites.

What's really exciting about this is not the negative side of "Oh boy, here goes my profession, here goes my self-respect, how am I going to get that home on the lake when they cut the job." That doesn't interest me. What interests me is the question, "Once we're free from all this routine, vulgar, low-level, anti-intellectual, demeaning human labor, what can we do next?" What are the vistas open to us in the arts, in writing, in composing, in doing research and development work? What I think could happen, if educators embrace this revolution in ethnotronic information systems, is that we can gradually, school by school, and district by district, change our schools into research and development institutes aimed at a kind of metaphoric goal: improving the quality of life. The more you ask the question differently, the more you know what it could mean. And, theoretically, there is no limit to the kind of questions you could ask under that metaphor and the different ways you could attempt to answer and carry out the implications of answering these questions.

Schools are fixed in hundreds of years of ancient tradition. One aspect of the past 200 years of that tradition is that education was never meant to create creative people. You know, high schools only became important around the 1920's as explosive growth carriers of education, and it was only after World War II that the high school diploma really became important. But all this is in the context of the urban worker creation. This is not in the context of creating intellectuals. This is not in the context of raising dramatic increases in our capacity to the arts. This is in the context of raising the general level of sophistication of the mass America, but by never challenging in creative ways the traditions of our major institutions, including education. Now, if I can go down and buy off the shelf for my son, who's now a seventh grader, an Antioch degree for $499.95 and let him start wearing it today, don't you think I'm going to do that? Think of the chance he'll have at widened social contacts. You see, when you can wear your school, you literally can carry the faculty, the books and the information store. When you wear your school, if you can buy it outside of the controlled networks of formal bureaucratized public education, you're free. Then you can be a bus driver with a Ph.D. or just a bus driver with barely capable limits of literacy under your belt. You can be anything you want. This is very exciting because it frees people up. How about those postal workers--750,000 people--people who average perhaps $20,000 a year plus fringe benefits?

Now the question is, "What do you do with these people?" Let me offer this for your consideration--we are resisting success. We say that people who retire as early as in their 20's or 30's are hippies, people who don't seem to be in the work effort and yet who still manage to live well. We say it's better to wait till 60 or 65 (have your third heart attack first, of course, before you retire--get good and arthritic), and then go out and have a good time at Palm Beach when you can hardly crawl down to the water. See, we are resisting success in a labor intense society that refuses to acknowledge that its machines, its ethnotronic, and electronic information systems are coming to the point of relieving humans of the kinds of things we have already relieved them of in the muscle power area. And the more we do this, the more we create crises in identification. Now here's a gigantic role for education. Isn't it supposed to be preparing us for the future anyway? And if the future contains these electronic systems, we can be in the forefront of society's adaptations. We can help adapt to our profession in such a way as to gradually move the funds away from high labor intensity, high fiscal intensity education, to low fiscal intensity education--education where everybody is both an educator and a student, but where you don't have the high fiscal costs, the tenure, the rigid structure of, not only buildings, but personalities and bureaucracies.

Now you think perhaps I'm talking in the future. Well, before the Federal Communications Commission now are two proposals, one by Xerox Corporation, one by Comsat Corporation. All Xerox wants to do is broadcast high quality education, tax data, and other services to all major cities in the U.S. using very small, rooftop antennas. All Comstat wants to do is offer educational services right in your home by a small rooftop antenna by 1983. Oh yes--and entertainment and three-dimensional RV, etc. But I teach in a college that is so much into traditions of history that when I reproduce my lecture notes at the start of each quarter, mimeographed, and pass them out and say, "Now, we'll really have some discussions if you'll read these," my colleagues quake. They say, "What are you going to do the rest of the quarter?" And some of the students say they are being cheated, I'm not lecturing. You see, what we really have, rather than education, is a bureaucratized, highly rigidified,ignorant system. The society out there is rich in information. The average classroom isn't. The society out there experiences things in real time, which means as they occur. In education, we wait for the publishers to decide whether they are going to publish our books, and then the buyers to decide whether they are going to buy them before new ideas get into the classroom. So we get an average delay of 15 to 25 years between the onset of a major event in society, particularly an intellectual kind, and its general use in the classrooms. We always talk about making education relevant, we talk about making it cost-efficient. I submit to you, ladies and gentlemen, that from my point of view, and I suspect from every one of your points of view, we already know how to do it. We just won't. We're going to wait for the other shoe to fall. Then we're going to say "how cruel--how could you do this to us; we worked so hard." I think real professionals are working hard when they're trying to work themselves out of a job--to automate the automatable--to make it possible for the creative mind to do things that add to human knowledge, not simply just funnel it. Professionals working themselves out of jobs in education by making low-cost education generally available would be a major revolution in what we're doing. A step along the way would be to embrace the new ethnotronic systems, program them and shape them, in the interest of improving the quality of life in the U.S. and beyond. One way to do that is to go out right now and just look at your friendly target shelf, go down to your more sophisticated department store, look at what they have to offer, watch your Saturday and Sunday morning TV ads and you can see little girls hugging their ethnotronic systems. Let's get with it. Let's get in there and do this stuff in the interest of improving the quality of life. And I don't think we're going to have too many public relations problems. But, make sure you get academic freedom first, because only a fraction of the people in schools are going to want to do this. They're going to have to be protected from others in the schools, as well as from the community. You see, these are the people who want to work themselves out of jobs that are demeaning or beneath the level of even the average intelligent human being. These are the people who really want to see the country grow and prosper. These are the true patriots, the ones who take advantage of being a success. Somehow, we've got to take the money from somewhere we've got it and put it somewhere it is needed. That's a large part of what I think we can do if we embrace these systems. Thank you.

I think Art has time for a few questions.

Question: Should I buy Xerox or Comstat? (laughter)

Answer: Well, probably you could start your own educational corporation right now and five years from now, three years from now, two years from now be doing a lot better economically than you are now, using selected machines from these different places because of the very big turnover time on these things. The major problem right now is how do you get a general purpose machine that you can program in highly selected kinds of ways so that its shelf time is longer than, say, a year. But on the other hand, when costs get so low that you can throw them away, what difference does it make? And that's where we are. I have a Plato terminal in my study. It's already ancient. In fact I keep thinking of Charlie Chaplin on the screen when I look at the thing. It's too slow, it's too expensive, it keeps breaking down. It's interactive, but it's primitively interactive on a telephone line basis. I think that our society is bored and tired of the whole mess of generally not learning. They'd just love to see private competitive corporations get started right now that would compete against each other for the extra money in the family available for extra education. It's right funny you know. We pioneered all of this. Now we're sitting in the background watching the rest of the world running it.

Question: Are there similar advances in programming.....

Answer: Well, it depends on who you talk to. People who talk about self programming systems today say yes evermore, every day, every month, every year, we get a greater capacity for the chip that will teach itself. But also you get a high labor intensity, a high capital intensity front-end loading on these chips. But after this, it's home free.

Question: Why are you using Plato? I mean, you don't have to answer that.

Answer: Sure, they gave it to me.

Question: What's the difference, or how could you determine the difference between the primitive and the highly sophisticated?

Answer: Well you could make up the difference in a Plato when you get micro-computers real-time linked, probably not by phone line, but by laser line and/or on some kind of telecommunication satellite--something like that. That's the problem--linking the micro-computers and getting some curriculum things going. It's the problem of interfacing the two pieces of machinery, say over a 500-mile distance. When you're paying phone rates, that gets to be gigantic. So I think we already have the basic hardware, for example, for me to send a lot of information to a dispatch in New York from Minneapolis. But the problem is paying for the line and also paying for the interface equipment that the phone company demands that it provide or you provide.

Question: What about the quality of the programming?

Speaker: You have the same problem with textbooks. You have the same problem in a generic sense, no matter what your medium of information storage is. You've got good brains and good thinking to put together a good book or a good article, as well as a good cassette or mircro-processing.

Question: The whole idea of this is fascinating to me, but is there the possibility you could end up with a central group that would have all the technological knowhow and the money, whereas the poor, more limited people who didn't have the money, would have access only to the minimum kinds of services?

Answer: Well, that's what you have now.

Question: Then what's the improvement?

Answer: The improvement is to lower the cost and deinstitutionalize the service, so that poor people and others traditionally kept from access can have the choice to access if they want to. What we really have is invariable print-pulp technology standing in the way of my being able to conduct an adequate class and students being able to buy for their libraries this kind of material. So what do we want to do? You want to re-package it so it's cheap, and the quickest way to do that is package it electronically. Now in case of poor people being excluded from all this, the way you control people (whether they are poor or rich, whether professionals or not) is by carefully selecting the ways they get information and the amounts and kinds of information they get. Do we want our elementary school classrooms to give equal shift to capitalism and various forms of socialism or Marxism? No. So the poor people are not the only ones being cheated out of information richness. It's everybody. And we do this by selective means only partially related to economics. So again it's an academic freedom problem in public schools. You don't have it. And as long as you can't have it, the schools forever will be under the thumb of whatever interest group wants to put them there. But the moment you start packaging information, convivially packaging information, putting it on the target shelf, putting it in the public library, letting it lay around on the street, people can pick it up and start learning something.

Question: I want you to comment on the same question I asked in the other group. What makes you think this is going to change the world any more, so far as uplifting society, than the printed page in the encyclopedia? The same thing happened in the 20's, I guess, with radio. What makes you think your system, which all of us are somewhat aware of, is going to really do anything differently than what these other systems did?

Answer: Well, all over the world, wherever you have "high technology," the immediate thing you get is the development of a middle class sort of equipment. That is, people who are freed enough from the drudgery to have time to think about philosophy, write books, compose music, travel, etc. That's assuming the government will let them travel. Now, the way you get this is by taking away from them the necessity to be muscle laborers, muscle machines. What I'm suggesting for your consideration is that we're now about to do that with brains so that we don't have to be slaves at the sub-levels, the lowest levels of intellectual capacity or function. Now, I think that's a good thing--you may not, I don't know. To free people so that they can contemplate poetry, to trace their family histories, to participate in cleaning up the cities, etc.--is, I think, an efficiency step. We don't want just to "improve education" by keeping the budget going up to 10 or 15 percent. You can't do that. You can't let a budget rise exponent- ially. Seven years later, well, earlier than that, you'll start to see that you don't have enough money for everything. You've got to find ways to automate as we have done on the farm. Four percent of the labor force is on the farms now. It used to be closer to 90 percent. This means social change. There's no better place to turn for help in this kind of transition of humans orientations toward themselves, toward work, toward professions, than to public education.

Question: Are there any underlying indications to what you are saying about the future that will eliminate grass roots, school buildings, etc.?

Answer: Yes, virtually all that will go, if this comes. There's no reason to have a building except for lab purposes or gymnasium purposes, if you can wear your school. If your school is updated by various means, there's just no reason to have people together like that. You could expand the sociability of people, particularly small children, by getting them out of school. Nowhere in our society, in such a massive, proportional basis, do we put any other part of our society together, Monday thru Friday, separated by age into narrow bands. That's not preparing people for the real world. That's preparing them for school. The real world is all mixed up--ages, sexes, colors, nationalities, etc.

Question: Isn't there a danger of radical ideaologists opening up something like this?

Answer: You see, you have radical ideologists to fear when you have only a handful of information systems. In a "primitive" society where you have a total of seven people constituting the entire society, you really have to watch out for radicals because they can perhaps mean the end of that society. Now, in America of the 1985 realm, you could have in the sky, receivable on the home rooftop, 200 satellite channels. Say 50 of these promoted education, maybe 100. Fifty different versions of American history could be transmitted sometime during any given calendar day of the week or month. That discourages radicals. That explores the fuzzy areas of human convictions, expanding them so that people actually have a choice about which kind of version of American history is most factually and otherwise appealing to them. This is not what makes idealogs and demagogues; it makes rational, reasoning citizens.

Thank you.

APPENDIX A

Forum Program

BI-REGIONAL EDUCATIONAL IMPROVEMENT FORUM

SCHOOL IMPROVEMENT THROUGH REGIONAL AND INTERSTATE COLLABORATION

Sponsored by the

Department of Health, Education and Welfare

Regional Office of Educational Programs, Region III
Regional Office of Educational Programs, Region IV
Appalachia Educational Laboratory, Inc.,
Regional Exchange
National Diffusion Network
Technical Assistance Base, Regional Service Unit III
in cooperation with
Research for Better Schools, Inc.
Regional Exchange

Atlanta American Hotel
Atlanta, Georgia

November 19-20, 1979

AGENDA

Monday, November 19, 1979

11:00 a.m. **Registration** Mezzanine

12:30 p.m. **Opening Session** Brunswick & Columbus Rooms

Welcome — William L. Lewis, Regional Commissioner, Office of Educational Programs, IV

- Albert C. Crambert, Regional Commissioner, Office of Educational Programs, III
- Lee E. Wickline, Administrative Director, Director, Division of Educational Replication, HEW
- John Minor, Associate Director, Dissemination and Improvement of Practice, NIE
- Remarks, — Jack Sanders, Director, Educational Services Division, Appalachia Educational Laboratories, Inc., Charleston, West Virginia.

Forum Logistics — Marilyn Hagan, Educational Program Specialist, Ofice of Educational Programs, IV

1:30 p.m. **SESSION I** Brunswick & Columbus Rooms

SEA Delivery Systems for School Improvement

- James B. Linder, Director, Technical Assistance Base Regional Service Unit III, Orangeburg, South Carolina

Presenters:

- Doren Madey, Project Director, Evaluation of the State, Dissemination Grants Program, National Testing Service Corporation, Durham, North Carolina
- David Crandall, Executive Director, The NETWORK, Andover, Massachusetts
- Charlie Williams, State Superintendent, Department of Education, Columbia, South Carolina

Reactors:

- Jess Pat Elliott, Director of Research, Georgia Department of Education
- Albert Elwell, University of New Hampshire, Durham, New Hampshire

3:30 p.m. **Break**

3:45 p.m. **Small Group Sessions** Augusta Room, Decatur Room, Eastman Room, Fulton Room

Facilitators:

- Jane Roberts, Dissemination Specialist, Research for Better Schools, Regional Exchange, Philadelphia, Pennsylvania
- Jerome Brock, Director, Mississippi Facilitator Project
- Martin McConnell, Director, Tennessee Facilitator Project

	• **Ed Patrick**, Research For Better Schools, Regional Exchange, Philadelphia, Pennsylvania	
5:30 p.m.	**Hospitality Hour**	Terrace A & B
6:30-7:45 p.m.	**Introduction** — Jack Sanders	Brunswick & Columbus Rooms
	Keynote Address: "Education in the 80's" - Henry 'Mitch' Brickell, President, Policy Studies in Education, New York.	

Tuesday, November 20, 1979

8:00 a.m.	Coffee and Danish	Brunswick & Columbus Rooms
8:30 a.m.	Synthesis of small group reactions to SEA Delivery Systems — James Linder	Brunswick & Columbus Rooms
	SESSION III (Concurrent Sessions)	
8:45-10:30 a.m.	Session II-A-Validation: A Cross Section of State Practices — W. Roberts Richmond, Director, Division of Educational Dissemination, Office of Educational Programs, III	Augusta Room
Presenters:	• Henry Helms, Director of Dissemination, Division of Development, Department of Public Instruction, Raleigh, North Carolina	
	• Donn Dieter, Consultant, Division of Development, Department of Public Instruction, Raleigh, North Carolina	
	• Waldo G. Weaver, Coordinator of Pennsylvania Diffusion Network, Bureau of Planning and Evaluation, Department of Education, Harrisburg, Pennsylvania	
	• Francis T. Phillips, Jr., Title IV-C, Virginia Department of Education	
	• Ray E. Foster, Acting Administrator, Title IV-C, Florida Department of Education	
8:45-10:30 a.m.	**Session II-B** — Program/Project Validation Resources	Decatur Room
	Overview and Introduction — Barry M. Apparies, Dissemination Specialist, Office of Educational Programs, III, and Jane Roberts	
	What resources and agencies are available to assist states in validating educational practices? This sessions involves interaction between participants and personnel from agencies charged with service delivery. A simulation activity involving small groups and a panel will be facilitated.	
9:00-9:30 a.m.	**Small Group Sessions**	
Facilitators:	• Richard Brickley, Pennsylvania State Facilitator, Research Information Service for Education (RISE), King of Prussia, Pennsylvania	

	• Sandra Orletsky, Assistant Director, Regional Exchange, Appalachia Educational Laboratory, Inc., Charleston, West Virginia	
	• John Peterson, Director, Resource and Referral Service, Center for Vocational Education, Ohio State University, Columbus, Ohio	
	• James Wise, Wise & Associates, West Columbia, South Carolina	
	• Jane Roberts	
9:40 a.m.	**Interaction with Panel**	
Panel:	• Barry M. Apparies	
	• Ed Ellis, Associate Director, Regional Programs, NIE	
	• Mary Ann Lachat, Director of Technical Assistance Base, Central Service Unit, Rochelle Park, New Jersey	
	• Ed Patrick, Dissemination Specialist, Research for Better Schools, Regional Exchange, Philadelphia, Pennsylvania	
	• Lee E. Wickline	
10:20 a.m.	Conclusion— Barry M. Apparies	
10:30 a.m.	**SESSION III** — Technology and School Improvement	
	Overview and Introduction — Gary Peevely, Assistant Director, Technical Assistance Base, Regional Services Unit III, Orangeburg, South Carolina	Brunswick & Columbus Rooms
12:00 p.m.	**LUNCHEON SESSION**	Ballroom
	Introduction — Gary Peevely	
	• Arthur Harkins, Director of Futures Graduate Concentration, University of Minnesota, Editor, Journal of Cultural and Education Futures	
1:30-1:45 p.m.	**Forum Synthesis** — Jack Sanders	Ballroom
	Wrap-up — Bob Richmond	

ADDENDUM

Tuesday, November, 20 - 10:30 A.M.

- Allan L. Peakes, Editor, Education Tomorrow, Published by the World Future Society